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ANNUAL REPORT

OF THE

BOARD OF PUBLIC WORKS

FOR THE YEAR

1883.^A

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Municipal Ref.

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BOARD OF PUBLIC WORKS.

COMMISSIONERS.

GEO. H. BENZENBERG,
C. P. FOOTE,
WM. P. O'CONNOR,
J. I. FROWNFEILER.

ORGANIZATION.

GEO. H. BENZENBERG, - - PRESIDENT, *Ex Officio*.
WM. P. O'CONNOR, - - SECRETARY.

DANIEL REGAN, - - CHIEF CLERK.
E. M. SCHUENGEL, - - ASSISTANT CLERK.
HENRY A. PHILLIPS, - - MESSENGER.

ENGINEERS' DEPARTMENT.

GEO. H. BENZENBERG, - - CITY ENGINEER.
ARTHUR H. SCOTT, - - ASST. ENGINEER.
NICOLAUS ENGEL, - ASST. ENGINEER, West Division.
FRED. SCHNEIDER, - " " South Division.
CHAS. J. POETSCH, - " " East Division.
WILLIAM SCHMIDT, - - DRAUGHTSMAN.
HENRY W. WHITE, - - CLERK.

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REPORT.

OFFICE OF THE BOARD OF PUBLIC WORKS, }
MILWAUKEE, January, 1884. }

*To the Honorable the Mayor and Common Council of the City
of Milwaukee :*

GENTLEMEN:—The Commissioners of Public Works present herewith their annual report of their official doings during the year 1883, together with the report of the City Engineer for the same time.

Owing to the limitation laws restricting taxation a great many desirable improvements have not been made.

The demand for street and alley improvements of all kinds, and for sewer and water mains was greater than could be granted, but all urgently necessary work, we were enabled to perform, and our streets are in a fairly good condition.

WATER WORKS.

The income from the water works for the year 1883 was as follows:

Regular water rates.....	\$128,141 90
Metered water rates.....	51,955 10
Miscellaneous water rates.....	2,103 33
Street sprinkling.....	8,167 00
Water for 806 fire hydrants @ \$20.00 each.....	16,120 00
Ferrules and Tapping.....	4,176 00
Penalties.....	657 82
Meter rents.....	223 28
Sundry bills.....	79 00

Total income.....\$211,623 43

The following table exhibits the consumption of water, and the revenue received annually, from the year 1874 to the year 1883 inclusive.

YEAR.	Gallons of water consumed.	Annual Revenue.	Revenue per million gallons.
1874.....	.....	\$ 39,244 68	.....
1875.....	953,719,955	63,752 56	\$66 85
1876.....	1,557,313,492	84,248 42	54 10
1877.....	2,534,623,650	98,367 87	38 81
1878.....	3,241,395,935	108,557 18	33 49
1879.....	3,870,411,590	129,505 41	33 46
1880.....	4,490,454,297	161,993 54	36 07
1881.....	4,855,501,612	180,506 86	37 17
1882.....	5,362,000,765	200,749 10	37 44
1883.....	5,397,876,086	211,623 43	39 20

The income from water rates during the year 1882 was \$200,749.10, and in 1883 was \$211,623.43, showing an increase for the year \$10,874.33.

For detailed information, see the accompanying full report of Mr. B. F. Cooke, the collector of water rates.

The expenditures of the water department for the year ending December 31st, 1883, were \$118,150.52, of which sum

\$93,734.83 is charged to maintenance account, and \$24,415.69 to construction account.

For details of these expenditures, see the report of the City Engineer.

The length of water mains laid during the year 1883 was $2\frac{180}{1000}$ miles, which amount being added to those laid in previous years $99\frac{211}{1000}$ miles, shows that the entire length of water main pipes laid up to the close of the year 1883 was $101\frac{391}{1000}$ miles.

Number of new hydrants set.....	12
“ “ “ stop gates set.....	14
“ “ “ meters set.....	130
“ “ hydraulic elevators.....	8
Total number of hydrants to date.....	806
“ “ “ stop gates to date.....	594
“ “ “ meters to date.....	221
“ “ “ indicators to date.....	116
“ “ “ elevators to date.....	126

The number of ferrules inserted in the mains in 1883 was 912, making the total number up to December 31st, 1883, 10,011.

The following statement taken from the report of Thomas McMillan, chief engineer of the East Side Pumping Works, shows the result of the working of the engines and pumping machinery during the year 1883. The engines Nos. 1 and 2 were operated, coupled $1721\frac{1}{2}$ hours, and No. 1 and 2 were in operation, running single $3,157\frac{1}{2}$ hours. Engine No. 3 was in operation 6,316 hours.

The total quantity of coal used in pumping was $4,394\frac{13}{20}$ tons.

The average duty of engines, calculated from the amount of coal consumed in pumping, was 82,751,885 pounds of water raised one foot high with 100 pounds of coal.

The total quantity of water pumped was 5,397,876,086 gallons, an average of 14,788,701 gallons per day.

The report of Gus. R. Merke, chief engineer of the West Side Pumping Works, shows the amount of work done by those engines during the year 1883, from which is taken the following:

The total number of hours of pumping was 8,682, and the amount of water pumped was 293,609,156 gallons, an average of 814,408 gallons per day during the year.

As the specified daily capacity of these engines is but 750,000 gallons, it will be readily seen that they are being worked beyond their power, and they should be replaced by machinery of greater capacity without delay.

The demands upon this branch of the service are constantly increasing, thus adding to the necessity of providing additional pumping facilities. The total amount of coal consumed was 269½ tons.

SEWERS.

During the year 1883 $4\frac{123}{1000}$ miles of public sewers were constructed, at a cost of \$61,115.56, making the total length of sewers constructed and in use January 1st, 1884 $110\frac{755}{1000}$ miles; and a total cost of all sewers constructed \$1,288,364.43.

Number of catch-basins built during the past year, 112. Total number of catch-basins built to date, 2,232.

The sewers built during the year are classed as follows, viz: 5,449 lineal feet of brick sewer, 16,323 feet of cement pipe sewers, which are divided between the different districts as follows:

SEWERAGE DISTRICT.	BRICK—Feet.	PIPE—Feet
East Sewerage District .....	.....	1,142
West Sewerage District.....	3,142	8,963
South Sewerage District.....	2,307	6,218
Total.....	5,449	16,323

EAST SEWERAGE DISTRICT.

Cost of sewers paid out of general fund.....	\$ 556 52
Cost of sewers paid by special assessment	1,252 84
Cost of inspection of sewers.....	96 00

BOARD OF PUBLIC WORKS.

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Cost of constructing 22 catch-basins.....	990 00
Cost of cleaning and repairing sewers and catch-basins, and other materials not included in contracts	7,108 62
Total.....	\$10,003 98

WEST SEWERAGE DISTRICT.

Cost of sewers paid out of general fund.....	\$26,188 18
Cost of sewers paid by special assessment.....	12,077 84
Cost of inspection of sewers.....	1,396 50
Cost of constructing 52 catch-basins.....	2,340 00
Cost of cleaning and repairing sewers and catch-basins, and other materials not included in contracts	9,749 80
Total	\$51,752 32

SOUTH SEWERAGE DISTRICT.

Cost of sewers out of general fund	\$7,741 16
Cost of sewers paid by special assessment.....	11,100 02
Cost of inspection of sewers.....	706 50
Cost of constructing 38 catch-basins.....	1,715 00
Cost of cleaning and repairing sewers and catch-basins, and all other materials not included in contracts	5,320 47
Total.....	\$26,578 15

RECAPITULATION.

East Sewerage District.....	\$10,003 98
West Sewerage District	51,752 32
South Sewerage District.....	26,578 15
Total	\$88,334 45

The following shows the total amount of sewerage certificates issued by the Board of Public Works since 1869:

1869.....	\$11,587 58
1870.....	19,512 34
1871.....	5,695 02
1872.....	24,832 23
1873.....	18,769 62
1874.....	92,141 02
1875.....	59,681 07
1876.....	64,067 10
1877.....	67,451 14
1878.....	44,285 48
1879.....	40,750 01
1880.....	29,171 56
1881.....	7,005 17
1882.....	37,486 20
1883.....	24,425 57
Total.....	\$546,860 51

MENOMONEE SPECIAL SEWERAGE WORKS.

During the year 1883 no work was done on the sewer proper. A new dock, which was rendered necessary by the carrying out of the special sewerage system, was built during the month of May, at a cost of \$2,775.00. Pursuant to the recommendation of the City Engineer the original plan was changed by the Council on December 10th. It is contemplated to proceed with the work during the coming year as rapidly as the funds will permit. (See report of City Engineer.)

STREETS.

Length of streets paved in 1883 was 3,146 lineal feet which was all cedar block pavement, being.....	$\frac{595}{1000}$ miles.
Length of streets paved prior to 1883.....	$25\frac{84}{1000}$ miles.
Total paved streets to date.....	$25\frac{679}{1000}$ miles.
Length of streets graded and graveled during 1883.....	4.079 miles.
Length of streets previously graded and graveled.....	127.202 miles.
Total to date.....	131.281 miles.

Length of streets repaved with wood during 1883.....	5,110 feet.
Length of streets repaved with stone during 1883....	4,702 feet.
Total	9,812 feet.
Length of alleys paved during 1883.....	1.785 miles.
Length of alleys previously paved	14.857 miles.
Total to date	16.642 miles.

SIDEWALKS.

Length of sidewalks built in 1883 about.....	9.68 miles.
Length of sidewalks repaired in 1883.....	.5 miles.

The total length of streets and alleys which were improved during the year 1883, is 11.859 miles, and is divided among the several districts as follows:

East District	2.748 miles.
West District.....	6.613 miles.
South District.....	2.498 miles.

In the execution of this work was done:

126,285 cubic yards of excavation. }	at a cost of.....	\$32,312 52
36,432 cubic yards of filling..... }		
24,956 cubic yards of gravel, at a cost of.....		18,815 01
21,166 square yards of Medina sand stone paving, at a cost of....		51,475 36
402 square yards of granite stone paving, at a cost of.....		904 50
35,164 square yards of cedar block paving at a cost of.....		31,683 46
3,866 square yards of McAdam paving, at a cost of.....		4,832 91
27,504 square yards of alley paving, at a cost of.....		13,614 53
25,565 square yards of gutter paving, at a cost of.....		11,119 16
6,354 square yards of sodding, at a cost of.....		635 20
16,806 lineal feet of stone curbing, at a cost of		11,421 31
53,344 lineal feet of sidewalk planking, at a cost of.....		12,689 74
Total.....		\$189,503 70

STREET CLEANING.

This work was performed by men and teams employed by the day, and cost about \$28,431.44.

STREET SPRINKLING.

This work was done by men and teams employed by the day, and cost \$27,800.59, and was assessed against the property abutting the streets sprinkled; the city bearing its just proportion of the cost for crossings and public property.

SCHOOLS.

Only one new building the Fifth District School building was in process of construction during the year, and that while nearing completion cannot yet be occupied, owing to the defectiveness of the steam heating apparatus. The building of this school has been attended with a great many unfortunate circumstances, the history of which is undoubtedly familiar to your honorable body. The first idea was to construct a building similar to the 14th district school, at a cost of \$35,000.00; but the high price of labor and material prevented the undertaking of the project.

On June 12th, 1882, the sum of \$25,000.00 was appropriated by your honorable body, and we were directed to expend that amount only in contracting for the construction of the building, whereupon the contract of enclosing the building (except roof finishing) was let to Duchow & Kropf, for the sum of \$22,250.00. This part of the work was not completed until during the month of January, 1883. And it was confidently expected, that upon the incoming of that year, that funds for the completion of the building would be at once appropriated. Although the urgent necessity of money was apparent, nothing was done until July 3d, 1883, when an additional \$25,000.00 was set aside.

As soon as legal delays were overcome, the contract for the roof and tower was let to Geo. P. Schmitt, for the sum of

\$5,460.00; and the inside finishing to Wm. Klocksinn, for \$19,430.00.

On August 20th, 1883, a further appropriation was made of \$15,500.00 to finish, furnish and heat the building, and contracts were let as follows: G. A. Spence & Co., gas fitting \$750.00; J. L. Judge, steam heating \$5,650.00, and J. A. McCann & Co., inside blinds \$990.00.

The total amounts appropriated for the building of this school-house amount to \$65,000.00. Contracts entered into \$54,530.00; showing a difference of \$10,097.00, most of which has been used in paying inspectors, architects, making desks and paying for work which was done to prevent damage to the building. The building when all completed and all bills paid will have cost very nearly the amount appropriated.

The building has proved more expensive than was anticipated when the plans were adopted, but the work has all been faithfully performed, and to-day the building proper stands as a model in all respects. The class-rooms are all large, well ventilated, and when furnished and heated will be all that can be desired. The teacher's rooms, exhibition hall, closets, play-rooms, etc., all are perfect.

Had the contract been let for the entire building at one time, and not parcelled out to different contractors, we are confident the cost would be much less. In future it would be well to avoid the annoyance occasioned in building in this manner, and not undertake the erection of any building until funds are in hand to complete it.

The Fourth District School building, we are pleased to note will be replaced with a new structure during the ensuing year, a much needed improvement. A new building will also be erected on block 1, Lynde's addition, Second ward, to accommodate the pupils of that section of the city, at an estimated cost of \$20,000.00.

An addition of two class-rooms should be made to the Tenth District Branch school building, and additional stairways should be placed in the Ninth District school building, and we are in-

formed that means will be provided by your honorable body for these improvements during the ensuing year.

The other school buildings have been repaired from time to time as necessity required, at a total expense of \$16,740.00.

BRIDGES.

Two new bridges were constructed during the year, viz: Racine street bridge and Cherry street bridge.

The cost of Racine Street bridge, foundation and approaches \$30,013.25.

The cost of Cherry street bridge including foundations and approaches was \$42,227.20.

The west approach of Point street bridge was rebuilt at a total cost of \$5,068.00.

Contracts have been entered into for the erection of Oneida street bridge, including foundation and abutments for the sum of \$40,000.00; to which must be added inspection fees, etc., making the probable outlay about \$42,000.00. The work is progressing well and when completed will no doubt give entire satisfaction.

A new viaduct over the railroad tracks on Sixth street, is being built by the Chicago, Milwaukee & St. Paul Railway Co., the city doing the work of planking the same. The cost to the city for this improvement, including labor and lumber, will be about \$4,000.00.

The bridges in use at present are as follows:

FIVE STATIONARY BRIDGES OF IRON.

1. North avenue, completed in	1874
2. Humboldt avenue, completed in	1876
3. Cherry street, completed in	1877
4. First avenue viaduct, completed in	1878
5. Racine street, completed in	1883

FOUR STATIONARY BRIDGES OF WOOD.

1. Dock street (across canal), completed in	1866
2. Dock street (across water power), completed in	1870
3. Canal street (across Holton's canal), completed in	1873
4. Canal street (across Menomonee river), completed in	1871

FIVE SWING BRIDGES OF WOOD.

1. Pleasant street, completed in	1870
2. Sixth street, completed in	1869
3. Sixth avenue, completed in	1873
4. Kinnickinnic avenue, completed in	1869
5. Lincoln avenue, completed in	1882

FOURTEEN SWING BRIDGES OF IRON.

1. Point street, completed in	1871
2. Chestnut street, completed in	1872
3. State street, completed in	1871
4. Huron street, completed in	1868
5. Buffalo street, completed in	1875
6. Broadway, completed in	1872
7. Muskego road, completed in	1873
8. First avenue, completed in	1872
9. Menomonee, completed in	1880
10. East Water, completed in	1881
11. Becher street, completed in	1881
12. Grand avenue, completed in	1882
13. Cherry street, (under contract)	
14. Oneida street, (under contract)	

The report of the City Engineer contains a statement of the condition of the bridges of the city, which makes further mention of them unnecessary.

The amounts expended for repairs of bridges are divided as follows:

Lumber.....	\$5,865 92
Other supplies.....	4,587 73
Labor, used in repairing.....	6,542 85
Total.....	<hr/> \$16,996 50

DREDGING AND DOCKING.

The amount appropriated for dredging and docking for the past year, was \$15,000.00.

The contract for dredging was awarded to H. Truman, at 28 cents per cubic yard, for the Milwaukee river, and at 21 cents per cubic yard, for the Menomonee and Kinnickinnic rivers.

The total amount of earth removed from the various channels was as follows:

Milwaukee river.....	38,080
Menomonee river.....	6,417
Kinnickinnic river.....	

Making a total of... 44,497 cubic yds.
Which cost.....\$12,009 97

The following statement shows the stage of water in the rivers during the year 1883:

January—0.186 feet above city datum line.

February—0.163 “ “ “ “ “

March—0.286 “ “ “ “ “

April—0.448 “ “ “ “ “

May—0.900 “ “ “ “ “

June—1.273 “ “ “ “ “

July—1.814 “ “ “ “ “

August—1.887 “ “ “ “ “

Sept.—1.721 “ “ “ “ “

October—1.474 “ “ “ “ “

Nov.—1.022 “ “ “ “ “

Dec.—0.960 “ “ “ “ “

The docks of the Milwaukee and other rivers were repaired wherever they were defective, in front of city property and at street intersections, at a cost of \$119.85.

The following is a statement of the expenditures, and the condition of the fund:

Appropriation.....	\$15,000 00
Paid for dredging.....	\$12,009 97
Paid for docking.....	119 85
Paid for inspection and sundries.....	605 90
	<hr/>
Making a total of.....	\$12,735 72
	<hr/>
Balance unexpended.....	\$2,264 28

PARKS.

No special appropriations were made for the improvement of parks, and no work of special importance was done.

IN GENERAL.

For detailed statement of all the work done in this department during the year 1883, and for other information and statistics, see the accompanying report of the several heads of the sub-departments. Respectfully submitted.

C. P. FOOTE,
W. P. O'CONNOR,
J. I. FROWNFEILER,

Commissioners of Public Works.

SCHEDULE OF CONTRACTS, ETC.

BOARD OF PUBLIC WORKS.

1883.



SPECIAL ASSESSMENTS.

The amounts of special assessments for various purposes for which certificates of the Board of Public Works have been issued according to law during the year 1883, are stated in the following schedules:

RECAPITULATION

Of tax certificates issued by the Board of Public Works for street and alley improvements in the year 1883:

WARD.	Number of Certificates.	Amount.
First	428	\$8,332 30
Second	92	5,615 20
Third		
Fourth	311	12,218 36
Fifth		
Sixth	121	4,312 45
Seventh		
Eighth	175	5,780 23
Ninth	82	1,268 36
Tenth	221	3,174 50
Eleventh	312	6,485 76
Twelfth	112	2,725 09
Thirteenth	147	3,002 78
Total	2001	\$52,915 23

RECAPITULATION

Of special taxes assessed by the Board of Public Works for sprinkling the roadway of streets during the year 1883.

WARD.	Amount.
First.....	\$2,362 07
Second.....	3,246 87
Third.....	2,850 84
Fourth.....	4,387 46
Fifth.....	1,699 02
Sixth.....	1,599 82
Seventh.....	2,593 70
Eighth.....	1,034 63
Ninth.....	1,438 45
Tenth.....	947 09
Eleventh.....	366 18
Twelfth.....	510 36
Thirteenth.....	42 01
Total.....	\$23,078 50

RECAPITULATION

Of sewerage certificates issued for the construction of main sewers during the year 1883.

DISTRICT.	Number of Certificates.	Amount.
East Sewerage.....	55	\$1,254 24
West Sewerage.....	394	12,080 88
South Sewerage.....	369	11,090 45
Total.....		\$24,425 57

RECAPITULATION

Of special tax levied for various miscellaneous purposes during the year 1883.

FOR WHAT PURPOSE.	Amount.
Cleaning sidewalks from earth and snow.....	\$402 97
Repairing defective sidewalks.....	850 49
Housedrains and Water connections.....	5,221 25
Total.....	\$6,474 41

RECAPITULATION

Of special assessments against property made for the laying of water pipe for the year 1883.

WARD.	Amount.
First.....	
Second.....	\$300 79
Third.....	
Fourth.....	3,357 72
Fifth.....	
Sixth.....	1,490 11
Seventh.....	
Eighth.....	2,594 48
Ninth.....	399 02
Tenth.....	791 72
Eleventh.....	
Twelfth.....	141 19
Thirteenth.....	768 00
Total.....	\$9,843 03

GRAND RECAPITULATION

Of tax certificates and special assessments and water pipe assessments made by the Board of Public Works during the year 1883.

	Amount.
Certificates for street and alley improvement.....	\$52,915 23
Sewerage Certificates.....	24,425 57
Special taxes for miscellaneous purposes.....	6,474 41
Special tax for sprinkling.....	23,078 50
Special assessments for water pipe.....	9,843 03
Total.....	\$116,736 74

COMPARATIVE STATEMENT, 1882-1883.

	Amount.
Total special assessments and certificates of Board of Public Works (not including water pipe) in 1882.....	\$153,946 87
Total special assessments and certificates of Board of Public Works (not including water pipe) in 1883.....	106,893 71
Decrease.....	\$47,053 16

The following list shows the total amount of assessments made in each year by the Board of Public Works since it was created, water pipe excepted:

For the year 1869	\$88,459 28
1870.....	80,807 25
1871.....	38,391 76
1872.....	64,557 47
1873.....	78,092 13
1874.....	187,622 51
1875.....	159,851 87
1876.....	213,558 71
1877.....	227,548 73
1878.....	201,759 06
1879.....	112,096 17
1880.....	183,327 00
1881.....	38,299 45
1882.....	153,946 87
1883.....	106,893 71
Total.....	<u>\$1,935,211 97</u>

The following list shows the total amount of taxes levied against property for laying water pipe since 1871, in which year the first assessments for said work were made.

For the year 1872.....	\$83,310 65
1873.....	232,370 04
1874.....	13,989 33
1875.....	38,985 04
1876.....	37,560 00
1877.....	31,308 03
1878.....	33,390 66
1879.....	14,569 54
1880.....	26,501 46
1881.....	7,826 67
1882.....	29,831 79
1883.....	9,843 03
Total.....	<u>\$559,436 24</u>

RECAPITULATION

Of cash received by the Board of Public Works, for permits given to connect private drains with the main sewers, and paid to the City Treasurer, as follows:

1883.	East Sewerage District.	West Sewerage District	South Sewerage District.	Total.
January.....	.....	\$3 00	.....	\$3 00
February.....	.....	3 00	.....	3 00
March.....	\$3 00	9 00	\$6 00	18 00
April.....	59 00	168 00	90 00	317 00
May.....	54 00	221 00	87 00	362 00
June.....	73 00	176 00	57 00	306 00
July.....	63 00	132 00	57 00	252 00
August.....	44 00	135 00	39 00	218 00
September.....	56 00	351 00	50 00	457 00
October.....	70 00	270 00	39 00	379 00
November.....	40 00	78 00	26 00	144 00
December.....	12 00	41 00	15 00	68 00
Total.....	\$474 00	\$1587 00	\$466 00	\$2527 00

The total cash receipts, for sewerage permits, during the year 1882, was \$2,729.00.. On comparison with this year's receipts from the same source, a decrease is shown of \$202.00.

RECAPITULATION

Of cash received by the Board of Public Works for surveying private property in the several wards of the city of Milwaukee, during the year 1883:

	Amount.
First Ward.....	\$8 00
Second Ward.....	12 00
Third Ward.....	4 00
Fourth Ward.....	4 00
Sixth Ward.....	8 00
Ninth Ward.....	8 00
Tenth Ward.....	4 00
Twelfth Ward.....	4 00
Total.....	\$52 00

MISCELLANEOUS RECEIPTS, 1883.

Date.	For What Received.	Credit to Fund.	Amount.
Jan. 9	Damage to 1st Avenue Bridge	Bridge Repairs	\$89 13
9	Old material	School Repairs	48 00
16	Hauling done	Third Ward	23 50
29	Earth filling	Eighth Ward	9 00
30	Street repairs	Seventh Ward	5 05
31	Work	Seventh Ward	4 00
Feb. 19	Paving stone	Fifth Ward	32 88
24	Work	First Ward	14 60
March 10	Rent	General City	15 00
14	Material	School Repairs	6 00
16	Street repairs	Fifth Ward	3 88
28	Water used	Water Fund	3 00
28	Work	East Sewerage	1 50
28	"	West Sewerage	2 00
April 2	House sold	General City	160 00
10	Street repairs	Third Ward	12 75
11	Work	West Sewerage	2 00
17	Material	General City	44 00
May 12	Work	Twelfth Ward	29 00
23	"	South Sewerage	5 50
23	"	South Sewerage	13 00
23	"	Fifth Ward	9 63
25	Forfeiture of money deposited	General City	225 00
June 2	Work	Fifth Ward	4 00
6	"	South Sewerage	14 00
7	"	Twelfth Ward	12 20
12	Cleaning sewers	South Sewerage	6 25
16	Rent	General City	20 00
19	Cleaning sewers	East Sewerage	2 50
19	"	West Sewerage	3 50
23	Street repairs	First Ward	5 09
23	"	Seventh Ward	1 25
23	Damage to bridge	Bridge Repairs	113 68
July 12	Cleaning sewers	West Sewerage	11 25
30	Work	Eleventh Ward	18 00
30	Street repairs	Sixth Ward	4 50
30	"	Fourth Ward	12 75
30	Gravel	Seventh Ward	3 75
Aug. 14	Old paving blocks	First Ward	4 95
24	Street repairs	Fifth Ward	14 00
24	"	Second Ward	25 18
24	"	Eighth Ward	12 00
27	Error in bill for sewer	West Sewerage	3 04
30	Cleaning sewers	South Sewerage	8 37
30	Street repairs	Second Ward	19 05

MISCELLANEOUS RECEIPTS, 1883.—*Continued.*

Date.	For What Received.	Credit to Fund.	Amount.
Sept. 6	House sold.....	Second Ward.....	165 00
10	Private work.....	Seventh Ward.....	24 11
10	Connecting sewer.....	West Sewerage.....	50 00
13	Repairing sidewalk.....	Seventh Ward.....	5 50
14	“.....	Seventh Ward.....	27 84
26	Dirt sold.....	Twelfth Ward.....	4 00
Oct. 19	Old map frame sold.....	General City.....	25
20	Team work.....	First Ward.....	28 00
23	Repairing gutters.....	Second Ward.....	6 00
30	Repairing sidewalk.....	Seventh Ward.....	1 50
Nov. 5	Private work.....	Seventh Ward.....	12 75
12	Scrap iron sold.....	General City.....	66 10
16	Fine collected.....	Water Fund.....	25 00
20	Old school seats sold.....	General City.....	37 09
24	Private work.....	Seventh Ward.....	2 50
Dec 1	School desks sold.....	General City.....	39 65
3	Dirt sold.....	Eighth Ward.....	52 10
3	“.....	Twelfth Ward.....	5 00
3	School desks sold.....	General City.....	87 10
8	Earth filling.....	Fourth Ward.....	5 00
10	Fine collected.....	Water Fund.....	10 00
13	Street repairs.....	Second Ward.....	13 55
18	Earth filling.....	Eighth Ward.....	28 40
25	Work.....	Eighth Ward.....	1 25
25	“.....	Fifth Ward.....	8 25
26	Removing ashes.....	Seventh Ward.....	33 75
31	Work.....	Third Ward.....	28 00
		Total.....	\$1845 43

WARD PROPERTY.

The Foremen of the Wards report the following, as the property of the Wards respectively now in their possession;

WARDS.	Wrenches.	Squares.	Augers.	Screwdrivers.	Tape Lines.	Ice Bars.	Grind Stones.	Straight-edges.	Truck Wagons.	Sprinkling Tubs.	Oil or Naptha Lamps.	Stone—Loads.	Lumber - Feet.	Cedar Posts.	Picks	Hatchets.	Hammers.
First	1	1							4	4	43		400		2		3
Second		1									6				11		4
Third		1							4	4	12				5		6
Fourth									3	8	42				3		1
Fifth		1	1	1	1	1	1	1	3	3	33	10	2500	50	1	1	10
Sixth									2	3	57		200		6	4	4
Seventh	1							1					12332		5	1	5
Eighth							1	1	2	2	105		150		5		3
Ninth									2	3	40	6	2500	6	8	2	3
Tenth		1								2	83		1000		2		7
Eleventh										3	113		120		3		
Twelfth											58		300		1		1
Thirteenth											52		2000		4	1	

WARDS.

[illegible]

GENERAL CITY PROPERTY.

The superintendents of Sewers, School Repairs and Bridges report the following property in their possession:

SEWERS—WEST AND EAST SEWERAGE DISTRICT.

Tool Chest	1
Sewer Cleaning Machine.....	1
Feet of new Wire Rope	500
Feet of old Wire Rope.....	300
Pails.....	4
Hand Ropes.....	2
Hose Protectors	2
Picks.....	8
Hand Saw.....	1
Lanterns	5
Ladder	1
Pairs of Rubber Boots.....	4
Wheelbarrows.....	2
Hydrant Wrenches.....	2
Feet of Iron Chain.....	100
Oil Cans.....	2
Force Pump.....	1
Spirit Level.....	1
Straight Edge.....	1
Feet of Hose	350
Feet of Lumber.....	800
Cement Box	1
Hatchet.....	1

SOUTH SEWERAGE DISTRICT.

Derricks.....	2
Wagon Boxes.....	2
Pails.....	4
Picks.....	4
Lamps.....	4
Crowbars.....	2
Gaspipe Rods.....	40
Scoops.....	2
Ladder.....	1
Bridges.....	2
Piece Rope.....	1
Vice, etc.....	1
Hose—feet.....	500

SCHOOL REPAIRS.

Fence Post Augers.....	2
Wheelbarrows.....	3
Picks.....	4
Shovels.....	2
Spades.....	2
Snow Shovels.....	2
Glue Pot.....	1
Paint Mill.....	1
Extension Ladder—30 feet long.....	1
Swinging Scaffold, complete.....	1
Rope with Tackle, feet.....	100
Crowbar.....	1
Tinsmith's Shears.....	1
Sledge Hammer.....	1
Horse and Wagon.....	1

BRIDGE REPAIRS.

Bridge Brands.....	2
Large Key Wrenches.....	4
Monkey Wrench.....	1
Hinch Wrench.....	1
Large Ring Wrenches.....	4
"S" Wrenches.....	4

Flat Wrenches.....	5
Planking Dogs.....	6
Pairs of Brass Tongs.....	9
Feet of 1½ in. Hose.....	30
Extra Bridge Levers.....	6
Extra Bridge Keys.....	2
Extra Bridge Chairs.....	8
Large Wheel Wrench.....	1
Large bright Lamps.....	4
Red Signal Lanterns.....	4
Extra Ladders.....	4
Extra Bridge Signs.....	3
Bbl. red Paint.....	½
Bbl. Linseed Oil.....	¾
Box Stove for Shop.....	1
Scoop.....	1
Bridge Wheel Patterns.....	4
Pinion Wheel Patterns.....	5
Wheel Chills.....	6
Dozen Lamp Chimneys.....	2
Dozen Lamp Globes.....	4
Feet Oak Plank.....	5000
Cord Bridge Blocking.....	1
Desks.....	2
Lamps.....	2
Chairs.....	4
Coal Stove.....	1
Scows.....	3
Large Jack Screws.....	17
Small Jack Screws.....	6
House Screws, etc.....	8
Crowbars.....	6
Clamp Screws.....	3
Swivel Screws.....	1
Cross-cut Saws.....	3
Ship Augers.....	23
Hardy Chisels.....	3
Shovel.....	1
Spike Sets.....	3
Cold Chisels.....	10
Stone Drills.....	4
Large Double Blocks.....	2

Handy Tackles	4
Anvil	1
Grindstones	2
Ice Pikes	3
Iron Sheave Blocks	2
$\frac{3}{4}$ Chains, 20 feet long	2
Ferry Chains, 350 feet long	2
Steel Punchers	6
Stone Chisels	8
Key sets	4
Trowel	1

The following property is in use at the various bridges, viz:

Life Preservers and Grappling Irons	19
Scrapers	30
Wheelbarrows	17
Lanterns	17
Axes	16
Hand Axes	17
Shovels	23
Snow Shovels	35
Scoops	17
Brooms	37
Crowbars	34
Oil Cans	38
Wrenches	20
Picks	6

MISCELLANEOUS CONTRACTS—1883.

March	15.	Chris. H. Starke, constructing dock, etc., at the foot of Park St. and in front of block 176, 5th Ward, special sewerage	\$2,775 00
	27.	Jacob Herr, constructing Fire Engine House on National Avenue, 8th Ward.....	7,314 00
April	28.	H. J. Steinman, Lumber:	
		East Division - Common lumber	12 78
		“ “ -Common flooring	21 00
		West “ -Common lumber.....	11 71
		“ “ -Common flooring	21 00
		South “ -Common lumber.....	12 28
		“ “ -Common flooring	21 00
May	11.	H. Truman, Dredging Milwaukee river, per cubic yard 28c; Menomonee river, per cubic yard 21c; Kinnickinnic river, per cubic yard 21c.	
	12.	D. W. Purtell, constructing abutment for Point St. Bridge.....	4,944 00
	17.	Chipman & Raesser, White oak lumber for bridge-repairs, per M feet.	23 50
June	15.	R. P. Elmore & Co., 5,000 tons of coal for water department, @\$7.09 per ton	
July	14.	Edwin Hyde, constructing stone-flagging sidewalk on Wisconsin Street near Grand Avenue Bridge @\$6.90 per square yard.....	
	14.	Sloteman & Kruse, putting in steam heating apparatus in new Engine House on National Avenue	612 00
	20.	“The Bell Waterphone Co.,” for rent of waterphone, per year.....	500 00
	20.	C. H. Starke, constructing substructure of Cherry St. Bridge.....	26,875 00
	20.	Geo. P. Schmidt, completing tower and roof of the 5th District School building	5,460 00
Aug.	14.	Thomas Philipps, Patent Exhaust Fan for Council Chamber.....	225 00
	25.	William Klocksinn, completing the 5th District School building.....	19,430 00
Sept.	8.	W. H. Keepers, constructing superstructure of Cherry St. Bridge	14,450 90
	5.	W. T. Casgrain, rebuilding protection pier at North Point Pumping Works:	
		12 x 12 inch. pine timber.....\$35.00 per 1,000 ft. B. M.	
		8 x 12 “ white oak timber	45 00 “ “ “
		2 x 8 and 4 x 6 inch pine timber.....	30.00 “ “ “
		Wrought iron screw bolts.....	8c per lb.

Sept.	15.	Val. Kuhlman, laying 6 and 8 inch water main pipe: 6 inch pipe 24% c. per lineal foot; 8 inch pipe 36% c. per lineal foot	
	19.	Geo. A. Spence, gasfitting and plumbing in the 5th District School building	750 00
	29.	G. Campbell & Sons, cast iron frame and gate for temporary inlet at North Point Pumping Works	300 00
Oct.	8.	James L. Judge, steam heating apparatus in the 5th District School...	5,650 00
	12.	C. H. Starke, constructing substructures of Oneida St. Bridge.....	25,600 00
	27.	Fred. Krautz, building gate house at the reservoir of Milwaukee Pumping Works	848 00
Nov.	15.	Geo. P. Schmidt, tinning roof on No. 4 Engine House.....	180 00
	24.	Jas. A. McCann & Co., putting in the inside blinds of 5th District School building	990 00
	28.	W. H. Keepers, constructing superstructure of Oneida St. Bridge	14,400 00
Dec.	1.	H. J. Steinman, Lumber for 6th Street Viaduct:	
		150 pieces, 7 x 14 inches, 32 feet.....@ \$27 97 per M.	
		27 " 7 x 14 " 24 "	23 97 "
		3 " 12 x 12 " 18 "	16 00 "
		24 " 4 x 14 " 24 "	22 97 "
		6 " 8 x 12 " 22 "	22 97 "
	1.	Hatch, Holbrook & Co, 56,012 feet white oak lumber and timber, for 6th Street Viaduct (in the aggregate)	1,380 60
	4.	J. A. McGann, constructing stable for Police Patrol Wagon, at the South Side Police Station.....	524 00

SCHEDULE OF CONTRACTS—FIRST WARD.

DATE.	CONTRACTOR	STREET	FROM	TO	Grading, per cubic yard.	Graveling, per cubic yard.	Gutter-paving, per square yard.	Planking, per lineal foot.	Gravel for street repairs, per cubic yard.
June 12	John T. Hoff	Lake Avenue	Lafayette Place	N. line of Gilman's Subd	.24				
16	D. W. Purtell	Lake Avenue	Lafayette Place	N. line of Gilman's Subd				.27 3/8	.88
16	William Caspar								
28	John Donoghue	Oakland Avenue	Cambridge Ave.	North Ave.	.14	.70	.44 1/2		
Aug. 28	Pat. Shea	Oakland Avenue	Cambridge Ave.	North Ave.				.28	
6	John Donoghue	Frederick	Farwell Ave.	Bradford	.17	.72	.47		
6	Pat Shea	Frederick	Farwell Ave.	Bradford				.27	
11	John T. Hoff	Farwell Ave.	North Ave.	Frederick		.79	.49		
11	John Morrissey	Farwell Ave.	North Ave.	Frederick				.27 9-10	
11	O'Connor and Polczynski	Farwell Ave.	North Ave.	Frederick	.13 1/2				
12	John T. Hoff	Irving Place	Prospect Ave.	Cambridge Ave.	.13				
12	S. R. Kane	Irving Place	Prospect Ave.	Cambridge Ave.		.69	.40	.26	

SCHEDULE OF CONTRACTS—SECOND WARD.

DATE	CONTRACTOR.	STREET.	FROM	TO	Grading, per cubic yard.	Graveling, per cubic yard.	Gutter-paving, per sq're yard.	Planking, per lineal foot.	Alley Paving, per sq're yard.	House Drains, per lineal foot.	Long Water Service, per lineal foot.	Short Water Service, per lineal foot.	Wood curbing, per lineal foot.	Cedar block pavement, per square yard.	Cedar blocks for repairs, per square yard.
Mch	22 Patrick Drew.	Sixth.	Cedar.	State.				.34					14	1.17	
	22 Val. Kuhlman.	Sixth.	Cedar.	State.											.49
June	22 Jas. Markey.														
July	25 H. J. Freudenfeld.	Vliet.	Twelfth.	Twentieth.						.41	.50	.87			
Aug	28 John Denker.	Alley, block 123.	Twelfth.	Summer.											
	28 J. F. Beers.	Twentieth.	State.	Cedar.	.20½				.70						
	28 Chas. Forristal.	Twentieth.	State.	Cedar.		.78	.44	.29							
Sept	8 F. Vogt.	Twentieth.	Prairie.	State.	.25										
	8 Chas. Forristal.	Twentieth.	Prairie.	State.		.88									
	8 Dan. Gokowsky.	Twentieth.	Prairie.	State.			.40								
	19 Jacob Werner.	Twentieth.	Prairie.	State.				.27½							
Nov	9 James O'Connor.	Twenty-first.	Chestnut.	Vliet.				.28¾							

SCHEDULE OF CONTRACTS—THIRD WARD.

DATE.	CONTRACTORS.	STREET.	FROM.	To	Laying stone blocks per square yard	Medina stone paving blocks per sq. yd.	Gravel per sq yard.	House drains per lineal foot.	Long water service per lineal foot.	Short water service. per lineal foot.
May 8.	Lorenz Seymer.....	Gravel for street repairs..	.....	.....	.....	.....	.93	.....	.....	.....
June 16.	Albion Medina Stone Company.....	.....	.....	.....	.....	\$1.79	.....	.....	.....	.....
June 23.	R. J. Finn.....	Milwaukee	Wisconsin	Michigan	.....	.....	.....	.57	.58	.98
Aug. 3.	Albion Medina Stone Company.....	.....	.....	.....	.23	.....	.....	.....	.....	.....

SCHEDULE OF CONTRACTS.—FOURTH WARD.

[illegible]

SCHEDULE OF CONTRACTS—FIFTH WARD.

DATE.	CONTRACTOR.		Oil Lamps, per lamp per year.	Stone paving blocks, per sq. yard.	Gravel for street repairs.
Feb. 21.....	P. R. Wolf.....	Lighting Street Lamps.....	\$11.00	.....	.....
May 8.....	Julius Duemke.....	Gravel.....	.....	.....	.....
June 5.....	Kearney and Barrett.....	Medina Sand Stone.....	.....	\$1.84	.....
Sept 12.....	Lawrence Murphy.....	Medina Sand Stone.....	.....	1.76	.....

SCHEDULE OF CONTRACTS—SIXTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM	TO	Alley-paving, per square yard.	Gravel for street repairs.	Macadamizing roadway, etc.	Planking sidewalks.	Grading, per sq're yard.
April 10	Fred. Grokowsky.....	Alley, block 22, Sherman's Add'n....	Harmon.....	Lloyd.....	.74	.....	.....	.....	.....
June 12	Mantle Marsh.....	Gravel for street repairs.....	.....	.....	.....	.97	.....	.....	.....
August 14	Fred. Gottschalk.....	Alley, block 12, Sherman's Add'n....	Lloyd.....	Garfield Ave....	56	.....	.....	.....	.....
14	Fred. Gottschalk.....	Alley, block 101.....	Sixth.....	Seventh.....	43	.....	.....	.....	.....
14	John Denker.....	Alley, block 101.....	Sixth.....	Seventh.....	.....	.....	.....	.....	.....
Sept. 27	Jas. Markey.....	Cape.....	Point.....	Dock.....	.....	.....	.....	.....	.24
27	Thos. Morrissey.....	Cape.....	Point.....	Dock.....	.....	.....	1.45	.....	.....
Oct. 20	Henry Vogt.....	Alley, block 3, Sherman's Add'n....	Garfield Ave....	North Ave.....	.55	.....	.....	.15½	.....

SCHEDULE OF CONTRACTS—SEVENTH WARD.

DATE.	CONTRACTOR.		Gravel for re- pairs of streets.	Stone paving blocks per square yard.	Laying stone pavement per square yard.
May 8.	Mantle Marsh.....		.95	1.84	
June 5.	Kearney and Bairrett	(\$1,000.00 worth).....			
Sept. 4.	Lawrence Murphy.....	(10,000 square yards).....			.21

SCHEDULE OF CONTRACTS—EIGHTH WARD.

DATE.	CONTRACTORS.	STREET.	FROM	TO	Lighting oil lamps per lamp per year.	Gravel per cb yard.	Grading, per cubic yard.	Gutter paving, per square yard.	Planking, per lineal foot.	Alley Paving, per square yard.
Feb. 12.	P. R. Wolf.	Washington Ave	National Ave.	Railroad	11 00	.48	.12	.38		
May 12.	Matt. Heiden.	Washington Ave.	National Ave.	Railroad					.26 3/8	
Aug. 14.	D. W. Purtell.	Alley Blk. 169, P. Mc-	Fourth Ave.	Fifth Ave.						.59
	Lorenz Seymer	Martin's subdivision	Fourth Ave.	Fifth Ave.			.19			
Aug. 14.	John Thiede.	Alley Blk. 169, P. Mc-	Fourth Ave.	Fifth Ave.						
		Martin's subdivision	Mineral	Washington						.57 3/4
Sept. 22.	J. Duenke.	W. Alley Blk. 173 Quen-	Mineral	Washington						
		tin's subdivision.	Mineral	Washington						.52
	J. Dierschow.	E. and W. and N. and	Mineral	Washington						
		S. Alley Blk. 173 Quen-	Mineral	Washington						
		tin's subdivision.	Second Ave.	Third Ave.						.62
Sept. 22.	John Thiede.	Alley Blk. 9 W. P. add.	Third Ave.	Fourth Ave.						.64
	Lorenz Seymer.	Alley Blk. 10 W. P. add.	Third Ave.	Fourth Ave.						

SCHEDULE OF CONTRACTS—NINTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM.	To.	Oil Lamps per lamp per year.	Grading per cubic yard.	Graveling per cub yd.	Gutter paving per square yard.	Planking per lineal foot.	Long water service per lineal foot.	Short water service per lineal foot.	House drains per lineal foot.	Alley paving per square yard.
March 21.	Fred. Sell.				\$13 50								
May 2.	Henry Vogt	Twenty-second	Clark.	Elm.		.33	1.07						
May 2.	Jacob Werner	Twenty-second	Clark	Elm.					.29				
July 25.	Carl Schmidt.	Twenty-second	Clark	Elm.				.43					
	P. H. Murphy.	Walnut.	Fond du Lac Av	Twentieth.						.59	.91	.47	
Aug. 14.	Martin Borchert.	{ Alley Block 218, Thomas subd and Mallon's subd.	E. and W. Alley	Vine		.20							

SCHEDULE OF CONTRACTS—TENTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM	TO	Oil lamps, per lamp per year.	Planking, per lineal foot.	Grading, per cubic yard.	Alley-paving, per square yard.
Feb. 21.....	Fred. Sell.....	Seventeenth.....	Centre.....	Hopkins Road..	\$13.50	29%	.....	.....
April 18.....	James O'Connor.....	Seventeenth.....	Centre.....	Hopkins Road..	.....	.....	.....	.....
Aug. 3.....	Henry Vogt.....	Alley, block 19, Vliet's Addition.	Lloyd.....	Garfield Ave..	.....	.....	.21	.....
Sept. 8.....	John Denker.....	Locust.....	Seventh.....	Ninth.....	.....	.....	.7½	.60
	J. F. Pierce.....							

SCHEDULE OF CONTRACTS—ELEVENTH WARD.

DATE.	CONTRACTOR.	STREET	FROM	To	Oil lamps, per lamp per year.	Alley-paving, per square yard.	Grading, per cubic yard.	Graveling, per cubic yard.	Gutter-paving, per square yard.	Planing, per lineal foot.
April 4..	A. Weidner.....	{ N. & S. alley, blk 132, L. W. Week's addition.....	Lapham.....	E. and W. alley.....	.....	.65	.....	.....	.....	.....
4..	A. Weidner.....	{ E. & W. alley, blk 132, L. W. Week's addition.....	First avenue.....	Second ave.....	.....	.65	.....	.....	.....	.....
4..	Lorenz Seymer.....	{ N. & S. alley, blk 144, L. W. Week's addition.....	Lapham.....	Mitchell ..	.....	.69	.....	.....	.....	.....
14..	Julius Duemke.....	Union.....	Railroad.....	S. line of W. P. Southern add'n	.....	.....	.35	.59	.57	.....
14..	Thos. Morrissey.....	Union.....	Railroad.....	S. line of W. P. Southern add'n	.....	.....	.....	.....	.....	.31
Aug. 29..	Lorenz Seymer.....	Tenth avenue.....	Forest Home ave.....	Lincoln ave.....	.....	.....	.....	.65	.49	.....
30..	A. Weidner.....	Tenth avenue.....	W. Lake ave.....	Lincoln ave.....	.....	.....	.....	.....	.....	.27
Oct. 19..	Wm. Gutknecht.....	Becher.....	Eighth ave.....	W. line of B. R. and B. Subd'n	.....	.....	.15	.49 3/4	.39 3/4	.....
19..	Wm. Klein.....	Becher.....	.....	.....	10.02	.....	.....	.....	.....	.....
30..	A. Weidner.....	Becher.....	Eighth ave.....	W. line of B. R. and B. Subd'n	.....	.....	.....	.....	.....	.27

SCHEDULE OF CONTRACTS—TWELFTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM	TO	Oil lamps, per lamp per year.	Alley-paving, per square yard.	Graveling, per cubic yard.	Grading, per cub. yard.	Lake gravel.
March 6...	P. R. Wolf.....	Gravel for street.....	.....	.....	\$13.50.....	.....	.....	.....	.....
May 11...	Hildebrand Bros.....	N. and S. alley, block 149.....	.....	.....	.....	.....	.....	.....	.....
July 14...	A. Weidner.....	N. and S. alley, block 149.....	Lapham.....	E. and W. alley.....	.....	.....	.....	.....	.....
July 14...	Julius Duemke.....	Ward.....	Lapham.....	E. and W. alley.....	.....	.....	.....	.....	.....
August 3...	Christian Beck.....	Ward.....	Kinn. ave.....	Alexander ave.....	.....	.....	.....	.....	.....
August 3...	L. Luedke.....	Ward.....	Kinn. ave.....	Alexander ave.....	.....	.....	.....	.....	.....
August 16...	A. Weidner.....	Alley, block 10, B. and M. add.....	Orchard.....	Lapham.....	.....	.....	.....	.....	.....

SCHEDULE OF CONTRACTS—THIRTEENTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM	TO	Gravel per cubic yard.....	Grading, per cubic yard.	Sidewalk Planking, per lineal ft.	Alley-paving, per square yard.
June 14.....	John Roehring.....	Gravel for street repairs.....	.....	.....	\$1.00	.....	.....	.....
Aug. 15.....	Fred. Grokowsky.....	Alley, block 11 Wm. P. Young's subd.	North Ave	Lee	.....	.....	.....	.73
15.....	Fred. Grokowsky.....	Alley, block 8 Wm. P. Young's subd.	Lee	Wright.	.....	.....	.....	.75
Sept. 8.....	J. F. Pierce.....	Locust.....	Seventh	Ninth	.....	.07½	.....	.....
Oct. 20.....	James Hoye.....	Richards.....	Centre.	Burleigh	.....	.....	25¾	.....
Nov. 15.....	John Roehring.....	Gravel for street repairs.....	.....	.....	.84½	.....	.....	.....

STREETS SPRINKLED—FIRST WARD.

STREET.	FROM.	TO.
North Water	Division	Brady
East Water	Division	Cherry St. Bridge
Market	Division	North Water
Broadway	Division	North Water
Milwaukee	Division	North Water
Jefferson	Division	Knapp
Jackson	Division	Pleasant
Van Buren	Division	Lyon
Cass	Division	Kewaunee
Marshall	Division	Kewaunee
Astor	Division	Brady
Franklin	Division	Brady
Farwell Ave.	Franklin	90 ft. N. Irving place
Prospect Ave.	Division	Lafayette place
North half of Division	Milwaukee River	Lake Avenue
Knapp	Broadway	North Water
Knapp	Milwaukee	Prospect Ave.
Pleasant	Jefferson	Franklin
La Fayette place	Prospect Ave.	Terrace Ave.
Terrace Ave.	Lafayette place	Wyoming place
Brady	Farwell Ave.	Prospect Ave.
Royal place	Farwell Ave.	Prospect Ave.
Dane place	Prospect Ave.	Farwell Ave.
Lyon	Cass	Marshall
Brady	Astor	Marshall
Ogden	North Water	Franklin
Pleasant	North Water	Milwaukee River
Prospect Ave.	Lafayette place	Windsor place
North Water	Pearson	Brady
Albion	Prospect Ave.	Doty

STREETS SPRINKLED—SECOND WARD.

STREET.	FROM.	TO.
North half Cedar, except from Eighth to Ninth	West Water	Eighteenth
State	Milwaukee River	Twenty-first
Prairie	Third	Eighth
Prairie	Ninth	Fourteenth
Chestnut	Milwaukee River	Sixteenth
Poplar	Third	Seventh
Cold Spring Ave.	Tenth	Twelfth
South Half of Vliet	Third	Twentieth
Winnebago	Chestnut	Vliet
West Water	Cedar	Third
Third	Cedar	Vliet
Fourth	Cedar	Vliet
Fifth	Cedar	Vliet
Sixth	Cedar	Vliet
Seventh	Cedar	Vliet
Eighth	Cedar	Chestnut
Eighth	Winnebago	Vliet
Ninth	Cedar	Winnebago
Tenth	Cedar	Winnebago
Eleventh	Cedar	Vliet
Twelfth	Cedar	Vliet
Thirteenth	Cedar	Vliet
Fourteenth	Cedar	Vliet

STREETS SPRINKLED—THIRD WARD.

STREET.	FROM.	TO.
East Water	Wisconsin.....	Milwaukee River
Broadway.....	Wisconsin.....	Milwaukee River
Milwaukee	Wisconsin.....	Erie
Jefferson	Wisconsin.....	Menomonee
Jackson	Wisconsin.....	South line of Menomonee.....
Michigan	East Water	C. & N. W. R. R
Huron	Milwaukee River	Van Buren
Detroit.....	East Water.....	Beach.....
Buffalo	East Water.....	Beach.....
Chicago	East Water.....	Jackson.....
Erie	East Water.....	Jackson.....
Cass	Wisconsin.....	Huron
Van Buren	Wisconsin.....	Detroit.....
South half of Wisconsin.....	Milwaukee River	C. & N. W. R. R
Huron	Cass	Van Buren
Juneau.....	West line Milwaukee.....	Jackson
Jefferson.....	Menomonee	Erie

STREETS SPRINKLED—FOURTH WARD.

STREET.	FROM.	TO.
West Water.....	Cedar.....	Menomonee River.....
Second.....	West Water.....	West Water.....
Third.....	Cedar.....	Fowler.....
Fourth.....	Cedar.....	Fowler.....
Fifth.....	Cedar.....	Fowler.....
Sixth.....	Wells.....	Fowler.....
Seventh.....	Wells.....	Fowler.....
Eighth.....	Wells.....	Hinman.....
Ninth.....	Cedar.....	Grand Ave.....
Ninth.....	Sycamore.....	Clybourn.....
Tenth.....	Cedar.....	Clybourn.....
Eleventh.....	Cedar.....	Clybourn.....
Twelfth.....	Cedar.....	Grand Ave.....
Thirteenth.....	Cedar.....	Clybourn.....
Fourteenth.....	Cedar.....	Clybourn.....
Fifteenth.....	Cedar.....	Clybourn.....
Sixteenth.....	Cedar.....	South line of lot 8 Blk. 256 Rogers Subdlvision.....
Seventeenth.....	Cedar.....	Grand Ave.....
Eighteenth.....	Cedar.....	Grand Ave.....
Nineteenth.....	Grand Ave.....	Clybourn.....
First Avenue.....	Canal.....	Sixth St. Bridge.....
Clermont.....	Muskego.....	Clybourn.....
Hinman.....	Fowler.....	West line of lot 7, Block 137..
Fowler.....	West Water.....	Hinman.....
Hill.....	Fowler.....	Clybourn.....
Clybourn.....	Milwaukee River.....	Fourteenth.....
Sycamore.....	Milwaukee River.....	Thirteenth.....
Grand Ave.....	Milwaukee River.....	City Limits.....
Wells.....	Milwaukee River.....	City Limits.....
South half Cedar except bet. Eighth and Ninth.....	West Water.....	Eighteenth.....
Twenty-seventh.....	Cedar.....	Grand Ave.....
Seventeenth.....	Grand Ave.....	Clybourn.....
Sixteenth.....	South line of lot 8 Blk. 256 Rogers Subdivision.....	Clybourn.....

STREETS SPRINKLED—FIFTH WARD.

STREET.	FROM	TO
Barclay.....	South Water.....	Florida.....
Ferry.....	East Water Street Bridge.....	Lake.....
Clinton.....	South Water.....	Railroad.....
Reed.....	Milwaukee River.....	Railroad.....
Hanover.....	Oregon.....	Railroad.....
Greenbush.....	Florida.....	Railroad.....
Grove.....	Florida.....	Railroad.....
East half of First Ave.....	Canal.....	Railroad.....
South Water.....	Reed.....	Lake.....
Lake.....	Hanover.....	South Water.....
Oregon.....	Hanover.....	Clinton.....
Florida.....	Barclay.....	First Ave.....
Virginia.....	Clinton.....	First Ave.....
Park.....	Clinton.....	First Ave.....
Pierce.....	Reed.....	First Ave.....
National Ave.....	East line Block 110.....	First Ave.....
Walker.....	Clinton.....	First Ave.....
Mineral.....	Clinton.....	First Ave.....
Washington.....	Railroad track.....	First Ave.....
Scott.....	Barclay.....	First Ave.....
Madison.....	Clinton.....	First Ave.....
North half of Railroad.....	Clinton.....	First Ave.....
Between blocks.....	53.....	54.....
College Place.....	Hanover.....	Greenbush.....

STREETS SPRINKLED—SIXTH WARD.

STREET.	FROM.	TO.
Second.....	Sherman	Reservoir Ave.....
Third.....	Vliet	North Ave
Fourth.....	Vliet	Reservoir Ave.....
Fifth	Vliet	Cherry
Fifth	Galena.....	Harmon
Sixth	Vliet	Cherry
Sixth	Galena.....	Walnut
Sixth	Reservoir Ave	Harmon
East half of Seventh.....	Vliet	Harmon
North half of Vliet.....	Third	Seventh.....
Cherry	Second	Seventh.....
Galena.....	Second.....	Seventh.....
Walnut	Second	Seventh.....
Sherman	Third	Seventh.....
Reservoir Ave.....	Third	Seventh.....
Harmon	Third	Seventh.....
Beaubian	Third	Buffum
Point	Cherry St. Bridge.....	Canal
Sixth	Sherman	Reservoir Ave.....
Beaubian	Buffum	Holton
Lloyd	Third	Sixth
Island Ave	Sherman	Walnut
East half of Seventh.....	Harmon	Lloyd
Harmon	Second	Third
Fourth	Harmon	Lloyd
Second	Reservoir Ave.....	Lloyd
Dock	Pleasant St. Bridge.....	Rail Road track.....

STREETS SPRINKLED—SEVENTH WARD.

STREET.	FROM.	TO.
River	Oneida	Division
East Water	Wisconsin	Division
Market	Mason	Division
Broadway	Wisconsin	Division
Milwaukee	Wisconsin	Division
Jefferson	Wisconsin	Division
Jackson	Wisconsin	Division
Van Buren	Wisconsin	Division
Cass	Wisconsin	Division
Marshall	Wisconsin	Division
Astor	Oneida	Division
Waverly place	Martin	Division
Lake Avenue	Biddle	Division
North half of Wisconsin	Milwaukee River	C. & N. W. R. R
Mason	Milwaukee River	Astor
Oneida	Milwaukee River	Astor
Biddle	River	Lake Ave
Johnson	Milwaukee	River
South half of Division	Milwaukee River	Lake Ave
Martin	Milwaukee River	Lake Ave

STREETS SPRINKLED—EIGHTH WARD.

STREET.	FROM	To
West half of First Ave.....	Canal.....	Railroad.....
Second Ave.....	Pierce.....	Railroad.....
Third Ave.....	Pierce.....	Railroad.....
Fourth Ave.....	Park.....	Railroad.....
Fifth Ave.....	National Ave.....	Railroad.....
Sixth Ave.....	Park.....	Railroad.....
Seventh Ave.....	National Ave.....	Railroad.....
Virginia.....	First Ave.....	Fourth Ave.....
Park.....	First Ave.....	Seventh Ave.....
Pierce.....	First Ave.....	Fourth Ave.....
National Ave.....	First Ave.....	Washington Ave.....
Walker.....	First Ave.....	Seventh Ave.....
Mineral.....	First Ave.....	Seventh Ave.....
Washington.....	First Ave.....	West line of Walker's Pt. add
Scott.....	First Ave.....	Seventh Ave.....
Madison.....	First Ave.....	Seventh Ave.....
North half of Railroad.....	First Ave.....	Eighth Ave.....

STREETS SPRINKLED—NINTH WARD.

STREET.	FROM.	TO.
West half of Seventh	Vliet	Walnut
Eighth	Vliet	Walnut
Ninth	Vliet	Walnut
Tenth	Mill	Walnut
Eleventh	Vliet	Walnut
Twelfth	Vliet	Walnut
Thirteenth	Vliet	Walnut
Fourteenth	Vliet	Fond du Lac Ave
North half of Vliet	Seventh	Twentieth
Mill	Seventh	Eleventh
Cherry	Seventh	Eighth
Cherry	Tenth	Eighteenth
Galena	Seventh	Twentieth
South half of Walnut	Seventh	Fond du Lac Ave
South half of Fond du Lac Ave	Walnut	North Ave

STREETS SPRINKLED—TENTH WARD.

STREET.	FROM.	TO.
West half of Seventh	Walnut	Harmon
Ninth	Walnut	Beaubian
Tenth	Sherman	Lloyd
Eleventh	Walnut	Beaubian
Twelfth	Walnut	Beaubian
North half of Walnut	Seventh	Fond du Lac Ave
North half of Fond du Lac Ave	Walnut	North Ave
Germania	Seventh	Ninth
Teutonia	Beaubian	Hopkins Road
Seventh	Harmon	Lloyd
Eighth	Germania	Harmon
Eighth	Beaubian	North Ave
Tenth	Sherman	Walnut
Eighth	Harmon	Beaubian

STREETS SPRINKLED—ELEVENTH WARD.

STREET.	FROM.	TO.
West half of First Ave.	Railroad	Mitchell.
Second Ave	Railroad	Mitchell.
Fourth Ave	Railroad	Mitchell.
Seventh Ave	Railroad	Mitchell.
South half of Railroad	First Ave	Eighth Ave
Mitchell	First Ave	Eighth Ave
Forest Home Ave	Mitchell	Bismarck Ave
Sixth Ave	Mitchell	Railroad

STREETS SPRINKLED—TWELFTH WARD.

STREET.	FROM.	TO.
Clinton.....	Railroad.....	Kinnickinnic Ave.....
Kinnickinnic Ave.....	Mitchell.....	South Bay.....
Reed.....	Mitchell.....	Railroad.....
East half of First Ave.....	Mitchell.....	Railroad.....
South half of Railroad.....	Clinton.....	First Ave.....
Mitchell.....	Grove.....	First Ave.....
Maple.....	Kinnickinnic Ave.....	Hanover.....
South Bay.....	Kinnickinnic Ave.....	Kenesaw.....
Hanover.....	Railroad.....	Orchard.....
Maple.....	Hanover.....	Grove.....
Orchard.....	Clinton.....	Reed.....
Orchard.....	Reed.....	Greenbush.....

STREETS SPRINKLED—THIRTEENTH WARD.

STREET.	FROM.	TO.
Third.....	North Ave.....	Lee.....

REPORT
OF THE
CITY ENGINEER
FOR THE YEAR
1883.

REPORT OF THE CITY ENGINEER.

CITY ENGINEER'S OFFICE, }
MILWAUKEE, January, 1884. }

To the Honorable, the Board of Public Works:

GENTLEMEN:—In accordance with the requirements of the charter, I herewith respectfully present to you the report of the operations of the various departments under my charge for the year 1883,

STREET IMPROVEMENTS.

The reports of the Assistant Engineers for the past year, which are herewith attached, show the total length of streets and alleys which were improved during 1883 to be $11\frac{859}{1000}$ miles and that the total cost of the same amounted to \$189,503.70.

Estimates were also made for $9\frac{212}{1000}$ miles of street and alley work, none of which has yet been completed.

The improvements made during the year consisted of the following:

126,285 cubic yards of excavation	}	at a cost of.....	\$32,312 52
36,432 " " filling			
24,956 " " gravel		at a cost of	18,815 01
21,166 square yards of Medina sand stone paving, at a cost of ..			51,475 36
402 " " granite stone paving, at a cost of			904 50
35,164 " " cedar block paving, at a cost of			31,683 46
3,866 " " McAdam paving at a cost of			4,832 91
27,504 " " Alley paving, at a cost of			13,614 53
25,565 " " Gutter paving, at a cost of			11,119 16
6,354 " " Sodding, at a cost of			635 20
16,806 lineal feet of stone curbing, at a cost of			11,421 31
53,344 " " sidewalk planking, at a cost of			12,689 74
Total			\$189,503 70

But 3,146 feet were added to the total length of wooden paved streets in the city, while over 21,000 yards of old wooden pavement were taken up and replaced with durable stone pavement.

There were also laid 3,866 yards of McAdam pavement, upon the construction of which the city steam roller was used. It was unfortunate, however, that limestone had to be used as a top dressing, when crushed granite of any dimensions can be had at a fair price from quarries within a hundred miles of this city.

WATER WORKS.

I herewith present for the first time a statement of the receipts and disbursements of this department since its organization.

STATEMENT OF THE RECEIPTS.

Received from sale of bonds and interest.....	\$1,563,332.78
" City on account of bridge.....	20,000.00
" Water-pipe assessments	
Up to Dec. 31, 1874.....	\$309,486.03
Dec. 31, 1875.....	54,063.08
Dec. 31, 1876.....	37,550.00
Dec, 31, 1877.....	31,308.03

Up to Dec. 31, 1878.....	33,390.66	
Dec. 31, 1879.....	14,569.54	
Dec. 31, 1880.....	26,501.46	
Dec. 31, 1881.....	7,826.67	
Dec. 31, 1882.....	31,124.21	
Dec. 31, 1883.....	9,843.03	\$555,662.71
Received from Construction Fund in 1883		\$14,989.74
“ for water rates, ferrules, etc.		
Up to Dec. 31, 1874.....	\$37,433.05	
Dec. 31, 1875.....	55,087.30	
Dec. 31, 1876.....	91,647.75	
Dec. 31, 1877.....	100,404.99	
Dec. 31, 1878.....	108,405.29	
Dec. 31, 1879.....	125,468.83	
Dec. 31, 1880.....	140,212.29	
*Dec. 31, 1881.....	195,139.36	
Dec. 31, 1882.....	175,473.06	
Dec. 31, 1883.....	201,747.79	1,231,019.71
Total receipts to date in Water Fund.....		\$3,385,004.94

* Sixteen months rates.

STATEMENT OF THE DISBURSEMENTS.

Cost of construction from Aug. 1871 up to

Dec. 31, 1874	\$1,855,401.39	
Dec. 31, 1875.....	112,177.77	
Dec. 31, 1876.....	50,485.77	
Dec. 31, 1877.....	46,067.04	
Dec. 31, 1878.....	65,508.56	
Dec. 31, 1879.....	20,173.81	
Dec. 31, 1880.....	21,381.13	
Dec. 31, 1881.....	100,154.48	
Dec. 31, 1882.....	91,624.38	
Dec. 31, 1883.....	23,899.07	\$2,386,873.40

Stock on hand..... 6,737.66

Cost of Maintenance

Up to Dec. 31, 1874.....	33,221.90	
Dec. 31, 1875.....	55,229.94	
Dec. 31, 1876.....	52,879.68	
Dec. 31, 1877.....	56,118.35	
Dec. 31, 1878.....	58,676.68	

Dec. 31, 1879.....	59,865.01	
Dec. 31, 1880.....	62,165.47	
Dec. 31, 1881.....	89,335.04	
Dec. 31, 1882.....	94,849.35	
Dec. 31, 1883.....	91,910.06	\$655,021.96
Stock on hand.....		12,156.57
Total cost of construction and maintenance.....		\$3,060,789.59
Interest paid on water bonds		
in 1880.....	\$48,493.50	
in 1881.....	63,506.50	
in 1882.....	50,000.00	
in 1883.....	100,000.00	
Total interest paid out of water fund		\$262,000.00
Delinquent water-pipe assessments on hand.....	16,479.59	
Amount due the construction fund.....	9,843.03	
Balance on hand in fund.....	\$35,081.41	
“ in hands of collector.....	811.32	\$35,892.73
		<u>\$3,385,004.94</u>

The expenditures for construction to date were as follows:

Reservoir.....	\$144,372.14
North Point Pumping Works.....	302,227.37
North Point Pumping Engines.....	267,935.97
River Pumping Works.....	6,067.09
West Side Pumping Works.....	26,972.19
West Side Pumping Engines.....	7,270.03
Pipe Distribution.....	1,464,560.86
North Street Bridge.....	88,779.08
Office Expenditures and Instruments.....	15,111.63
Engineering and Salaries.....	62,526.12
Telegraph Line.....	1,050.92
Total cost of construction.....	<u>\$2,386,873.40</u>

The following is a statement showing the amount of water pumped at the North Point Works and the revenue per million gallons received annually by the city from the year 1874 to date:

YEAR.	TOTAL GALLONS WATER PUMPED.	REVENUE PER MILLION GALLONS.
1875.....	953,699,955	\$47 41
1876.....	1,557,313,492	41 99
1877.....	2,534,623,650	29 36
1878.....	3,241,395,935	26 68
1879.....	3,870,411,590	25 28
1880.....	4,490,454,297	25 06
1881.....	4,855,501,612	27 36
1882.....	5,362,000,765	32 77
1883.....	5,397,876,086	34 27

The total receipts of the water department for the year 1883 were as follows:

For water rates.....	\$178,200.09
ferrules, meters, and other miscellaneous items.....	7,395.96
street sprinkling for the year 1882.....	8,600.00
street sprinkling for the year 1883.....	6,571.00
water rates by city orders.....	219.07
By city orders cancelled, fines, delinquent rates, etc.....	761.67
Total cash receipts during 1883.....	201,747.79
Balance on hand in water fund Jan. 1st, 1883.....	38,169.75
Total.....	\$239,917.54

The total expenditures of the water department for the year were as follows:

For maintenance.....	\$93,734.83
Interest on Water Bonds.....	100,000.00
Total expenditures.....	\$193,734.83

There is a balance due the water department on uncollected rates, street sprinkling and other items for the year 1883, as follows:

From private consumers, water rates uncollected.....	\$ 260.40
the city—water rates uncollected.....	4,072.53
the city—for hydrants.....	16,120.00
the wards—for street sprinkling.....	1,596.00
For branch connections, iron sold, etc.....	463.13
Total balance due for 1883.....	\$22,512.06

* The total actual cost of maintenance of the water department for the year 1883 (giving credits for stock on hand only) has been:

North Point pumping engines.....	\$48,032.48
North Point pumping works.....	3,924.67
West Side pumping engines.....	7,518.22
West Side pumping works.....	110.98
Distribution	9,909.43
Reservoir.....	5,802.56
North street bridge.....	1,059.65
Telephone line.....	110.00
Meters.....	3,290.46
Collector's office.....	9,020.92
Machine shop	39.54
Ferrules and boxes.....	2,579.24
Water rates refunded and damages.....	511.91
Making a total of.....	<u>\$91,910.06</u>

Owing to an act, relating to the separate funds of the Water Department, passed by the legislature at its last session, the construction fund was not in condition to permit of any expenditures under this head until late in the season. Only 225 tons of water pipe were purchased which were laid in October and November.

The total extension in the pipe distribution consisted of 11,517 feet or 2.180 miles of water mains laid at a total cost of \$14,170.70 of which amount \$9,843.03 were assessed against the property, leaving balance paid by construction fund of \$4,327.67. There were also expended for water pipe, hydrants, valves, etc., now on hand \$3,156.40 and for balance due on Engine No. 3, \$6,571.97. Total expenditures charged to construction, \$14,056.04.

NORTH POINT PUMPING WORKS.

The pumping engines at North Point are to-day and have been during the entire year in good working order, requiring no special repairs at any time.

The following table will show the total amount of water pumped and coal consumed at this station during the last six years:

YEAR.	TOTAL GALLONS PUMPED.	ANNUAL INCREASE IN GALLONS.	TOTAL POUNDS OF COAL CONSUMED	ANNUAL INCREASE OF COAL.
1878....	3,241,395,935	706,772,285	6,241,510	1,158,510
1879....	3,870,411,590	629,015,655	7,456,870	1,215,360
1880....	4,490,454,297	620,042,707	8,470,000	1,013,130
1881....	4,855,501,612	365,047,315	9,401,520	931,520
1882....	5,362,000,765	506,499,153	9,216,450	DECREASE. 185,070
1883....	5,397,876,086	35,875,321	8,789,300	427,150

A comparison of the amount of coal consumed and amount of water pumped as shown in this table, the average pressure having been nearly the same for these years, shows a fine increase in the average duties of the engines and this I think can materially be improved upon as the coming year will show.

The improvements and extensions it was designed to make at this station could not be inaugurated for the reason that the funds were not available until too late in the season.

The contract for grading and also for extending dock will be awarded before spring and the other improvements, as the building of new boiler house, coalshed, stack, new intake, etc., will be pushed forward immediately thereafter.

Considerable trouble was experienced by ice interfering with the flow of water through the intake pipe. The water is found to congeal at mouth of pipe, the current drawing the anchor ice, as it forms, into the same, where, coming in contact with the metal it adheres thereto, other particles of ice lodging against these, until the flow of water is gradually diminished and finally cut off. During the present winter this was partially prevented by dipping the ice, whenever it is forming, from the mouth of the pipe. By slightly increasing the temperature of the water at such times as the pipe is clogged by this soft ice,

the obstacle will be at once removed, and it is intended to make such provisions at the crib, during the coming season as will prevent any further trouble hereafter.

During the heavy northeast storms last spring a large portion of the approach pier to the crib was washed away. This was rebuilt under contract by Mr. W. T. Casgrain, at a total cost of \$2,191.35. A large part of this pier, having been exposed to the severe lake storms for over ten years, is now in such poor condition that it will not bear repairing and should, as soon as funds can be had, be entirely rebuilt.

WEST SIDE PUMPING STATION.

The engine at this station pumped during the year 293,609,156 gallons of water, an average daily consumption of 804,408 gallons showing a daily increase of 170,035 gallons over 1882.

When it is considered that the specified capacity of the pumps are only 750,000 gallons per 24 hours, the imperative necessity for new pumps is evident enough, and I am rejoiced at the assurance, that steps will be immediately taken to provide means for a 3,000,000 gallon pump. A new pump giving a high duty would also be an economical investment, when considered in comparison with the present pump, for the savings in fuel, would before many years be sufficient to pay for the same, the duty of the present engine not having exceeded 33,000,000 foot pounds at any time during the past year.

Provisions have also been made for a new independent supply main for the West Side pumping station to connect with the Fourth Street main at Prairie Street. This work will be pushed forward immediately after frost is out of the ground.

RESERVOIR.

As soon as all the pumping engines had been thoroughly overhauled, they were connected directly with the distribution and the water drawn out of the reservoir for the purpose of re-

pairing the walls. Over two feet of clay deposited and of growing vegetation was found upon the bottom. This was thoroughly cleaned out and the repairs made. The repairs as they proceeded were found to be necessarily more extensive than was at first anticipated. The spaces between and beneath the rear of the stones of nearly three-fourths of the entire stone side walls were found to be open, in some places to the extent of from 2 to 3 feet while in others the stone were found to have broken away and followed the bank. In other places the bottom when uncovered was found to have settled away from the walls. These spaces were all cleaned and solidly filled with concrete and the joints all washed and refilled with new cement, the entire repairs costing in the aggregate \$3,783.00.

The frame gate house having become old and unsafe, was torn down and a contract entered into with Mr. F. Kratz to replace the same with a neat little brick structure. This work has been completed at a cost of \$848.00 and adds materially to the attractiveness of the place.

As soon as opportunity will permit the bottom of the reservoir should be repaired as thoroughly as the walls were during the past year, the concrete of the bottom having been found to be very thin and of the poorest kind. I would recommend that provisions be made to permit the repairs to be made during the coming summer.

MAINS.

But very little was done in the way of laying new water mains. Only 8,441 feet of 6 inch and 3,076 feet of 8 inch pipe was laid in such streets where the same was most urgently called for. A great many could not be supplied on account of the lateness of the season. For that reason the amount of pipe to be laid during the coming year will likely exceed that of any of the last three years. The total length of water mains laid in the city amounts to $101\frac{391}{1000}$ miles. Some of the mains laid through the business center are proving to be insufficient to the

demand upon them, and I doubt not that before long many of the mains in this section of our city, laid when the water works were first introduced, will have to be renewed by larger mains.

One square of 6 inch main on Broadway, from Wisconsin to Mason street, has proven inadequate, and upon petition the Common Council has ordered the replacing of said main by one of 12 inch pipe, which will be done immediately upon frost leaving the ground, the pipe necessary being now on hand.

REPAIR SHOP.

This branch of the department has, as was anticipated, proven to have been a good investment. All ordinary repairs for the whole department have been made here at a great saving of time and money. Special provisions will be made for this branch in the new boiler and coal house, giving more room and better facilities.

WATER WASTE.

This subject, which has attracted the attention of most every water department in the country, is still a grievous one with us.

The first effort to check the unnecessary waste of water here, was made during the past season and with good results, considering the yet rude system adopted.

In June last the Common Council upon the showing made by a few meters the previous year, appropriated the sum of \$5,000.00 for the purchase of meters. Of this amount \$3,300.00 have been expended in the purchase of such meters and 130 meters have been placed since that time. The results have been similar to those of the year 1882, the water consumed during the first month after these meters were set amounting to 12,460,000 gallons against 7,350,000 gallons, the present consumption per month. The placing of the meters has not only had the effect of reducing the consumption of water, but also

that of increasing the revenue, for the semi-annual water rates paid in the aggregate by those upon whose service pipes meters have been placed early in the season, amounted to \$1,832.00, while the meter rate per half year for the same premises amounts to \$3,190.22. During the month of June a trial was made in detecting leaks and the waste of water by the aid of the Bell waterphone. The result was so satisfactory that in the following month a lease was made with the Bell Waterphone Co., of Cincinnati, for the right of using the instrument for one year. Only one party, consisting of two men, was detailed to this work. They have made from the above date to January 1st, 3,845 inspections, during which they discovered 337 leaks and 117 cases of willful waste. Of the above, 395 cases were remedied or repaired. The immediate effect of the two systems adopted to prevent the unnecessary consumption and waste of water was visible in the reduction of the consumption. During the first half of the year 1882 the average daily consumption of water amounted to 14,500,451 gallons, while during the same time in 1883 it amounted to 15,537,478 gallons, showing an average daily increase of 1,037,027 gallons. During the last half year of 1882 the average daily consumption amounted to 14,910,723 gallons, while during the same time in 1883 it was only 13,831,486 gallons, showing, instead of an increase, a daily reduction of 1,079,237 gallons, which is equal to a saving of 360,000,000 gallons of water during the last half of the year, or of over \$2,000.00 in coal alone.

The following table will show that this reduction is on a gradual increase and that if the systems are maintained a very much better showing can be made during the coming year, notwithstanding any increase in consumers.

Average daily consumption for the following months 1882 and 1883:

	1882.	1883.	Daily increase	Daily decrease
April.....	14,014,455	14,825,203	810,748	.....
May.....	13,700,145	13,992,400	292,265	.....
June.....	14,602,217	14,941,103	338,886	.....
July.....	14,846,372	14,500,363	.....	346,009
August.....	14,856,699	15,009,856	153,137	.....
September.....	15,458,449	14,643,756	.....	814,693
October.....	14,880,109	13,584,380	.....	1,295,729
November.....	14,270,778	12,918,668	.....	1,352,110
December.....	15,014,969	13,228,180	.....	1,786,789

BRIDGES.

The work on the substructure of Racine Street bridge was commenced by the contractor in November, 1882. No difficulty of any note was experienced during the construction of this work, which consisted of two stone abutments and one stone channel pier placed on pile foundations and extending 25 feet above datum line. It was completed by the contractor, Mr. W. T. Casgrain, in April, 1883. Mr. F. Weinhagen, who contracted in December, 1882, to furnish and erect the superstructure, consisting of an iron stationary bridge of two 115 feet spans, completed the same, May 26th, 1883, the total cost of structure amounting to \$30,013.25. The bridge is a very substantial one and is giving universal satisfaction.

The \$75,000 of bridge bonds issued by authority of the legislature, and which were disposed of in July, together with the balance of the issue of the bridge bonds of 1882, provided sufficient funds for the construction of two of the three most necessary bridges, besides rebuilding the west approach of Point Street bridge. Accordingly on May 12th, a contract was entered into with Mr. D. W. Purtell, to construct a stone abutment for the one armed swing bridge across the canal at Point Street. This work was completed, not without unnecessary delay, however, by Aug. 4th, 1883, at a total cost of \$5,068.00.

On July 20th, Mr. C. H. Starke, contracted to construct the stone center pier and abutments and a timber protection pier for a new iron swing bridge across Milwaukee River from the

foot of East Water Street to Point Street, for the sum of \$26,875.00. This work was commenced August 7th and completed December 31st. The iron bridge was let to Mr. W. H. Keepers, for the sum of \$14,450. Work in erecting the bridge was begun about the 1st of December, and completed sufficiently to permit the passage of public travel on January 1st. This work requires still some little attention before the same can be accepted. The channels on either side have been widened 14 feet in the new structure, giving now 57 feet opening.

A contract was entered into with Mr. C. H. Starke, on the 12th day of October, to construct stone abutments and pier for an iron draw-bridge across the Milwaukee River at the foot of Oneida Street, for the sum of \$25,600.00. The contractor began work on October 18th, and is now pushing it rapidly towards completion. On November 28th, Mr. W. H. Keepers, contracted to furnish, erect and complete the iron superstructure of this bridge for the sum of \$14,400.00. This bridge will be 167 feet long, giving a clear opening on each side of 62 feet, and is to be reopened to travel about April 1st, 1884.

On July 9th and 23d, propositions were received from the C., M. & St. Paul Railway Company, to reconstruct the Sixth Street Viaduct, the City to construct and maintain the roadway. The proposition was accepted, and on November 25th the Railway Company proceeded to raze the old wooden structure, and erect in its place an iron viaduct, consisting of five 74 feet spans and three 22 feet spans, resting upon solid stone piers, giving a clear head room of 19 feet above the rails.

The contract for the timber and plank for this bridge was let and will cost \$2,977.75.

Proper provisions no doubt will be made in the new budget permitting the reconstruction of the Sixth Street draw bridge and the approach thereto from the south, which are both in a very unsafe condition.

When this bridge is rebuilt there will be but four wooden draw-bridges in the city, viz: Kinnickinnic Ave., Sixth Ave, Pleasant Street and Lincoln Ave. bridges. The first two have

served their time and are in such condition that it will be economy to replace them with new substantial structures, instead of maintaining them by repairs.

SPECIAL SEWER.

Nothing of any amount was done in connection with the Menomonee special sewerage works during the year, excepting the building of a new dock across the foot of Park street and in front of part of the city property on the island (so-called). This work was completed in May at an expense of \$2,775.00.

Authority was given by the Common Council to proceed with the construction of section No. 1, which consisted of the connection under Milwaukee river and was that part of the special sewer work which was abandoned by the contractor, Mr. Buestrin, the year previous.

Before proceeding with the work I considered it my duty to call your attention and that of the Common Council to the impracticability of a large part of the general plan as it was adopted and approved in August, 1880, and that before work was renewed, a general change in that part of the plan not yet constructed be made, utilizing what had been finished.

In a communication sent to the Common Council on October 29th, I set forth my reasons for the views I held and offered such plan as in my opinion was necessary to achieve what was originally designed to be accomplished.

The Common Council at its session on December 10th approved of and adopted the new plan submitted and authorized the completion of the same so far as the funds that are available will permit. In accordance therewith plans and specifications for the completion of the connection under Milwaukee river, consisting of either a 50 inch diameter syphon pipe or a 64 inch diameter brick tunnel have been made and the work will be advertised for at once.

It is intended to push the work on this sewer sufficiently to partly utilize it this summer.

SEWERS.

During the year the sewerage system of the city was extended 21,772 feet, or $4\frac{123}{1000}$ miles, consisting of 5,449 feet of brick and 16,323 feet of pipe sewer, at a total cost of \$61,115.56.

The total length of sewers laid in the city up to the present time amounts to a total of $110\frac{755}{1000}$ miles, which has cost a total of \$1,288,364.43.

Detailed statement of the work done during 1883 in this branch of public improvements will be found in the reports of the assistant engineers.

In addition to the above, the work on the Washington avenue sewer was extended 929 feet north at a cost of \$16,951.55, under contract of Mr. R. Chambers.

But little difficulty was experienced in this extension of the sewer, which was constructed in an open cut, tunneling not being any longer necessary, the depth not exceeding 24 feet. This sewer has now reached the south line of Galena street.

During the coming season some provision should be made to extend the outlet to a point where the flow from this sewer will not damage the adjacent property.

In conclusion I desire to express my appreciation of the uniform courtesy and harmony of purpose which has prevailed between your Honorable Board and this Department, and to all my assistants the thanks due them for the zeal and efficiency displayed in the performance of their various duties.

Respectfully submitted,

G. H. BENZENBERG,

City Engineer.

ENGINEERING DEPARTMENT.

G. H. BENZENBERG, *City Engineer.*

The following is a statement of office work performed during the year 1883:

Plans and specifications for rebuilding the approach pier to the lake crib at the North Point Pumping Works.

Plans and specifications for an auxiliary intake for the North Point Pumping Works.

Plans and specifications for grading and improving the grounds of the North Point Pumping Works, and docking lake front of same.

Plans and specifications of stone center pier and abutments and timber protection pier for a bridge across the Milwaukee river, connecting the north end of East Water street and Point street, and general specifications for a wrought iron swing bridge for the same.

Plans and specifications for stone abutments for Point street bridge, crossing the canal.

Plans and specifications for a stone center pier and abutments and timber protection pier for a bridge across the Milwaukee river, connecting Wells and Oneida streets, and general specifications for a wrought iron swing bridge for the same.

Plans and specifications for section No. 1 of the special sewerage works, crossing the Milwaukee river.

Topographical map of the lake shore, from the North Point Pumping Works to the north end of Whitefish Bay.

Record of dredging performed in the Milwaukee, Menomonee and Kinnickinnic rivers and canals.

Plans and specifications for a new gate house for Kilbourn Park Reservoir.

Respectfully submitted,

A. H. SCOTT,

Asst. City Engineer.

REPORT
OF
STREET IMPROVEMENTS
IN THE
EAST DIVISION AND WEST DIVISION A
FOR THE YEAR
1883.

REPORT OF

STREET IMPROVEMENTS

IN THE

EAST DIVISION.

During the year 1883 the following street improvements have been completed in the First Ward:

STREET.	FROM.	TO.
Oakland ave.....	Royal Place.....	North ave.....
Cass.....	Ogden.....	Lyon.....
Frederick.....	Thomas.....	Bradford.....
Farwell ave.....	North ave.....	Thomas.....
Lake ave.....	La Fayette Place.....	N. line of Gilman's subdiv'n.

Making a total length of improved streets of 9,217 lineal feet, which required:

16,064 cubic yards of cutting, at a cost of.....	\$3,212 80
13,647 cubic yards of filling, at a cost of.....	2,729 40
4,449 cubic yards of gravel, at a cost of.....	3,559 20
5,222 square yards of gutter paving, at a cost of.....	2,349 90
1,380 square yards of sodding, at a cost of.....	138 00
860 lineal feet of stone curb, at a cost of.....	602 00
15,791 lineal feet of sidewalk planking, at a cost of.....	4,737 30

STREET IMPROVEMENTS...

During the year 1883 the following street improvements have been completed in the Third Ward:

STREET.	FROM.	TO.
East Water.....	Wisconsin.....	Point south of Detroit.....

Making a total length of improved streets of 1,550 lineal feet, which required:

7,515 square yards of Medina sandstone pavement at a cost of.....\$18,787 50

STREET IMPROVEMENTS.

During the year 1883 the following street improvements have been completed in the Seventh Ward:

STREET.	FROM.	TO.
Biddle	Jackson	Astor
Martin	Van Buren	Cass
East Water	Wisconsin	Mason
East Water	Oneida	Division

Making a total length of improved streets of 3,744 lineal feet, which required:

2,320 cubic yards of cutting, at a cost of	\$580 00
527 cubic yards of filling, at a cost of	131 75
1,513 cubic yards of gravel, at a cost of	1,513 00
1,411 square yards of gutter paving, at a cost of	141 10
4,972 square yards of sodding, at a cost of	497 20
3,004 lineal feet of stone curbing, at a cost of	2,102 80
10,000 square yards of Medina sand stone pavement, at a cost of	25,000 00

STREET AND ALLEY IMPROVEMENTS.

WEST DIVISION A.

During the year 1883 the following street and alley improvements have been completed in the Fourth Ward :

STREET.	FROM.	TO.
Fifth.....	Grand Ave.....	Cedar.....
Cedar.....	West Water.....	Seventh.....
Grand Ave.....	Eighth.....	Fifteenth.....
Sycamore.....	Eighth.....	Tenth.....
Sycamore.....	Twenty-seventh.....	Twenty-eighth.....
Twenty-eighth.....	Sycamore.....	Clybourn.....
Twentieth.....	Wells.....	Cedar.....
North and South alley blk 70..	Sycamore.....	Grand Ave.....
East and West alley block 70..	Second.....	Third.....
East and West alley block 86..	West Water.....	Second.....
Alley block 59.....	Grand Ave.....	East and West Alley.....
Alley block 218.....	Wells.....	Cedar.....
Alley block 21.....	Twentieth.....	Nineteenth.....

Making a total length of streets and alleys improved of 9,373 lineal feet, which required:

12,559 cubic yards of cutting at a cost of	\$3,139 75
7,102 cubic yards of filling, at a cost of	1,775 50
2,255 cubic yards of gravel, at a cost of	2,255 00
28,150 square yards of cedar block paving, at a cost of.....	25,230 37
2,172 square yards of gutter paving, at a cost of.....	1,086 00
4,299 square yards of alley paving, at a cost of.....	2,149 50
10,925 lineal feet of stone curbing at a cost of.....	7,647 50
6,731 lineal feet of sidewalk planking, at a cost of.....	2,019 30

STREET AND ALLEY IMPROVEMENTS.

EAST DIVISION.

During the year 1883, estimates were prepared for improving the following streets and alleys in the First Ward.

STREET.	FROM	To
Lyon.....	Jefferson.....	Cass.....
Maryland.....	Prospect Ave.....	Greenwich.....
Hamilton.....	Astor.....	North Water.....
Alley in block 236.....	Dane Place.....	Royal place.....
Alley in block B.....	Brady.....	Pleasant.....

Making a total length of streets and alleys to be improved of 3,578 lineal feet, which will require:

15,364 cubic yards of cutting.
 2,312 cubic yards of filling.
 2,789 cubic yards of gravel.
 2,582 square yards of gutter paving.
 3,129 square yards of sodding.
 2,254 square yards of alley paving.
 2,036 lineal feet of stone curbing.
 4,073 lineal feet of sidewalk planking.

STREET IMPROVEMENTS.

During the year 1883 estimates were prepared for improving the following streets in the Third Ward.

STREET.	FROM.	TO.
Milwaukee	Wisconsin	Michigan

Making a total length of street to be improved of 440 lineal feet, which will require:

853 cubic yards of cutting.
 2,611 square yards of cedar block pavement.
 210 lineal feet of sidewalk planking.

STREET AND ALLEY IMPROVEMENTS.

WEST DIVISION A.

During the year 1883 estimates were prepared for improving the following streets and alleys in the Fourth Ward.

STREET.	FROM.	TO.
Clybourn.....	Eighteenth.....	Twentieth.....
Fowler.....	Second.....	Fourth.....
Muskego ave.....	Canal.....	C. M. & St. P. R'y.....
Alley, Block 4.....	Sycamore.....	Clybourn.....

Making a total length of streets and alleys to be improved of 2,846 lineal feet, which will require:

2,030 cubic yards of cutting.
 4,488 cubic yards of filling.
 5,187 cubic yards of gravel.
 3,345 square yards of gutter paving.
 4,605 square yards of granite pavement.
 653 square yards of alley pavement.
 750 lineal feet of stone curb.
 3,837 lineal feet of sidewalk planking.

RECAPITULATION

Of work completed and estimated in the East Division and West Division A.

The total length of streets and alleys improved during the year 1883, was 23,884 lineal feet, or $4\frac{523}{1000}$ miles divided as follows:

East Division	2.748 miles
West Division A.....	1.775 miles

Which required:

30,943 cubic yards of excavation, at a cost of.....	\$6,932 55
27,276 cubic yards of filling, at a cost of	4,636 65
8,217 cubic yards of gravel,	7,327 00
28,150 square yards of cedar block pavement, at a cost of..	25,230 37
17,515 square yards of Medina sand stone pavement, at a cost of.....	43,787 50
8,805 square yards of gutter pavement, at a cost of.....	3,577 00
4,299 square yards of alley pavement, at a cost of.....	2,149 50
6,352 square yards of sodding, at a cost of.....	635 20
14,789 lineal feet of stone curb, at a cost of	10,352 30
22,522 lineal feet of sidewalk planking, at a cost of	6,756 60
<hr/>	
Total cost	\$111,384 67

RECAPITULATION

Of work estimated but not completed in the East Division and West Division A.

The total length of streets and alleys for which estimates were prepared in the year 1883, is 6,864 lineal feet or $1\frac{36}{100}$ miles, divided as follows:

East Division	0.761 miles
West Division A	0.539 miles

Which require:

18,247 cubic yards of excavation.
6,800 cubic yards of filling
7,976 cubic yards of gravel.
5,927 square yards of gutter paving.
2,907 square yards of alley paving.
2,611 square yards of cedar block pavement.
4,605 square yards of granite pavement.
3,129 square yards of sodding.
2,786 lineal feet of stone curb.
8,120 lineal feet of sidewalk planking.

STREET PAVEMENTS.

During the year 1883 the following streets were paved with *Medina Sandstone*:

East Water street, from Detroit to Mason street.

East Water street, from Oneida to Division street,

With Cedar Blocks;

Fifth street, from Grand Avenue to Cedar street.

Cedar street, from West Water to Seventh street.

Grand Avenue, from Eighth to Fifteenth street.

Making a total length of 9,072 lineal feet. East Water street and Grand Avenue had been paved before with pine blocks a length of 6,356 lineal feet, leaving a total length of 2,716 lineal feet added to the paved streets of the West Division A.

REPAVING AND REPAIRING.

The following is the amount of repaving done by the different Ward foremen in their wards:

WARD.	Square yards of cedar block pavement.	Square yards of stone gutters relaid.
Third	3,054	982
Seventh	1,896	233
Fourth	3,236	1,407

Respectfully submitted,

CHARLES J. POETSCH,

Ass't City Engineer.

To GEO. H. BENZENBERG, Esq.,

City Engineer.

mc.

DATE	TOTAL LENGTH OF PIPE SEWERS.	COST OF SEWERS CHARGEABLE TO.		COST OF INSPECTION.	TOTAL COST OF SEWERS.
		PROPERTY.	FUND.		
April 14	399	\$397 25	\$77 56	\$24 00	\$498 81
June 26	223	111 99	478 96	30 00	620 95
June 30	520	743 60	.....	42 00	785 60
	1,142	\$1,252 84	\$556 52	\$96 00	\$1,905 36

95-100 or, $.0\frac{216}{1000}$ miles.

EAST SEWERAGE DISTRICT.

Statement showing the number of lineal feet of Sewers built during the year 1883, and cost of the same.

DATE OF CONTRACT. 1883.	NAME.		LOCATION OF SEWERS.			MANHOLES.	PIPE SEWERS.—DIMENSIONS—						TOTAL LENGTH OF PIPE SEWERS.	COST OF SEWERS CHARGEABLE TO.		COST OF INSPECTION.	TOTAL COST OF SEWERS.
							CEMENT			CLAY.				PROPERTY.	FUND.		
	CONTRACTOR.	INSPECTOR.	STREET.	FROM	To.		18	15	12	18	15	12					
April 14	James Markey	By. Abert.....	Jackson.....	Michigan	Huron	5	.....	59	340	.....	.....	.....	399	\$397 25	\$77 56	\$24 00	\$498 81
June 26	James O'Conner	E. F. Herzberg.....	Racine	100 feet north of North Water	North Water	3	.....	123	100	.....	.....	.....	223	111 99	478 96	30 00	620 95
June 30	James Markey	E. F. Herzberg.....	Sobieski	North Water	Hamilton	6	.....	260	260	.....	.....	.....	520	743 60	.....	42 00	785 60
Total						14	.....	442	700	.....	.....	.....	1,142	\$1,252 84	\$556 52	\$96 00	\$1,905 36

the same.

D.	MENSIONS.		TOTAL LENGTH		COST OF SEWERS		COST OF	TOTAL COST
	CLAY.		OF SEWERS		CHARGEABLE TO.			
	15	12	BRICK.	PIPE.	PROPERTY.	FUND		
May				289	\$306 50	\$63 42	\$18 00	\$387 92
				405	320 42	141 83	23 50	485 75
				426	475 97	171 55	45 00	692 52
Jun			380			1,743 40	113 50	1,856 90
July			372	44	524 00	1,084 96	76 00	1,684 96
Aug				325	454 00	140 75	36 00	630 75
			752	1,492	\$2,080 89	\$3,345 91	\$312 00	\$5,738 80

2,244

\$5,738 80

OR 0. $\frac{425}{1000}$

WEST SEWERAGE DISTRICT.—A.

Statement showing the number of lineal feet of sewers built during the year 1883, and cost of the same.

DATE OF CONTRACT	NAME OF		LOCATION OF SEWERS.			MANHOLES	BRICK SEWERS.			PIPE SEWERS—DIMENSIONS.						TOTAL LENGTH OF SEWERS		COST OF SEWERS		COST OF INSPECTION	TOTAL COST OF SEWERS.
							DIMENSIONS.			CEMENT.			CLAY.					CHARGEABLE TO.			
	1883.	CONTRACTOR.	INSPECTOR.	STREET.	FROM.		TO.	96	36	30	18	15	12	18	15	12	BRICK.	PIPE.	PROPERTY.			FUND
May 2.....	Jas. Markey	By. Abert.....	Cedar.....	Fourteenth	Fifteenth.....	3						289					289	\$306 50	\$63 42	\$18 00	\$387 92
12.....	Thomas Lee.....	E. F. Herzberg.....	Seventh.....	Wells	Cedar.....	4						405					405	320 42	141 83	23 50	485 75
15.....	Val. Kuhlmann.....	By. Abert.....	Clermont.....	Fowler	Clybourn.....	4				426							426	475 97	171 55	45 00	692 52
June 26.....	D. W. Purtell.....	Jas. Dunn	Alley through blocks 71 and 72, Fourth Ward			3			380							380			1,743 40	113 50	1,856 90
July 3.....	Jas. Markey	Dav. Turner	Clybourn.....	Nineteenth	Eighteenth	4			372	47						372	44	524 00	1,084 96	76 00	1,684 96
Aug. 30.....	Dan'l O'Driscoll.....	E. F. Herzberg.....	Clybourn.....	Twentieth.....	Nineteenth	4				325							325	454 00	140 75	36 00	630 75
Total.....						22			752	798		694				752	1,492	\$2,080 89	\$3,345 91	\$312 00	\$5,738 80

752

1,492

2,244

\$5,738 80

2,244 feet

Or 0. $\frac{425}{1000}$

same.

NSIONS.		TOTAL LENGTH		COST OF SEWERS		COST OF	TOTAL COST
LAY.		OF SEWERS.		CHARGEABLE TO.			
15	12	BRICK.	PIPE.	PROPERTY.	FUND.	INSPECTION.	OF SEWERS.
M			763	\$829 96	\$314 54	\$49 50	\$1,194 00
			246	160 48	159 32	36 50	355 80
		929		498 12	16,177 43	276 00	16,951 55
			640	779 41	103 79	18 00	901 20
			478	504 00	316 41	72 00	892 41
			732	767 64	223 91	136 50	1,128 05
			342	308 41	160 13	26 50	495 04
J		330		432 00	746 10	56 00	1,234 10
			831	1,201 82	252 43	48 00	1,502 25
			296	267 71	140 77	18 00	426 48
J		719	59	1,000 00	1,857 04	70 50	2,927 54
			1032	598 48	765 91	75 00	1,439 39
			405	310 78	288 62	18 00	617 40
			303	323 23	137 33	27 00	487 56
			417	447 23	132 40	24 00	603 63
A			277	246 74	102 28	21 00	370 02
		412		570 00	830 80	52 50	1,453 30
			650	750 94	133 96	60 00	944 00
		2,390	7,471	\$9,996 95	22,842 27	\$1,084 50	\$33,923 72
		9,861		\$33,923 72			
I		OR 1,876		1000			

WEST SEWERAGE DISTRICT.—B.

Statement showing the number of lineal feet of sewers built during the year 1883, and cost of the same.

DATE OF CONTRACT 1883.	NAME OF		LOCATION OF SEWERS.			MANHOLES	BRICK SEWERS.			PIPE SEWERS—DIMENSIONS.						TOTAL LENGTH OF SEWERS.		COST OF SEWERS CHARGEABLE TO.		COST OF INSPECTION.	TOTAL COST OF SEWERS.
							DIMENSIONS.			CEMENT.			CLAY.								
	CONTRACTOR.	INSPECTOR.	STREET.	FROM.	TO.		96	36	30	18	15	12	18	15	12	BRICK.	PIPE.	PROPERTY.	FUND.		
May 2.....	Jas. Markey	James Kirkham	Reservoir Ave.....	Second.....	First.....	8				375	92	296				763	\$829 96	\$314 54	\$49 50	\$1,194 00	
2.....	Jas. Markey	By. Abert.....	Sherman.....	Hubbard.....	Island Ave.....	3					92	154				246	160 48	159 32	36 50	355 80	
8.....	Robt. Chambers.....	James Kirkham	Washington Ave.	Vliet.....	Galena.....	3	929								929		498 12	16,177 43	276 00	16,951 55	
12.....	Thomas Lee.....	E. F. Herzberg.....	Fourth.....	Hadley.....	Centre.....	7					352	288				640	779 41	103 79	18 00	901 20	
12.....	Dan'l O'Driscoll.....	G. K. Gregory.....	State.....	Twenty-third.....	Twenty-fourth.....	6				350	128					478	504 00	316 41	72 00	892 41	
12.....	Thomas Morrisey.....	Mich. Ryan.....	Twentieth.....	Walnut.....	Galena.....	8					317	415				732	767 64	223 91	136 50	1,128 05	
12.....	Thomas Lee.....	E. F. Herzberg.....	Wright.....	Eighth.....	Seventh.....	4					342					342	308 41	160 13	26 50	495 04	
June 7.....	D. W. Purtell.....	Jac. Dunn.....	Vliet.....	Twenty-first.....	Twentieth.....	3			330						330		432 00	746 10	56 00	1,234 10	
14.....	Robt. Chambers.....	By. Abert.....	Booth.....	Lloyd.....	Reservoir Ave.....	10					400	431				831	1,201 82	252 43	48 00	1,502 25	
26.....	Robt. Chambers.....	By. Abert.....	Beaubian.....	First.....	Second.....	3						296				296	267 71	140 77	18 00	426 48	
July 2.....	Robt. Chambers.....	Mich. Ryan.....	Seventh.....	Wright.....	Lee.....	6			719		59				719	59	1,000 00	1,857 04	70 50	2,927 54	
3.....	Jac. Werner.....	By. Abert.....	Walnut.....	Third.....	Island Ave.....	12					147	885				1032	598 48	765 91	75 00	1,439 39	
3.....	Jac. Werner.....	By. Abert.....	Eighth.....	Chestnut.....	Prairie.....	4						405				405	310 78	288 62	18 00	617 40	
3.....	Jac. Werndr.....	By. Abert.....	Prairie.....	Sixteenth.....	Seventeenth.....	4					59	244				303	323 23	137 33	27 00	487 56	
3.....	Jas. Markey.....	Levi Harris.....	Sixteenth.....	Cold Spring Ave.....	Chestnut.....	4						417				417	447 23	132 40	24 00	603 63	
Aug. 14.....	Jac. Werner.....	By. Abert.....	Eighth.....	Galena.....	N. alley in blks. 99, 100	3						277				277	246 74	102 28	21 00	370 02	
15.....	Chas. Brand.....	M. Ryan.....	Hubbard.....	Beaubian.....	North Ave.....	3			412						412		570 00	830 80	52 50	1,453 30	
23.....	Jac. Werner.....	By. Abert.....	Seventh.....	North Ave.....	Lee.....	7					650					650	750 94	133 96	60 00	944 00	
Total						98	929		1461	725	2638	4108				2,390	7,471	\$9,996 95	22,842 27	\$1,084 50	\$33,923 72

2,390

7,471

9,861

\$33,923 72

9,861 feet

OR 1,108 76

REPORT
OF
STREET IMPROVEMENTS
IN THE
WEST DIVISION B.

STREET IMPROVEMENTS,

WEST DIVISION—B.

During the year 1883 the following street improvements have been completed:

SECOND WARD.

STREET.	FROM	TO
Sixth	Cedar	State
Twentieth	Cedar	State
Cedar	Sixth	Seventh
Twentieth	State	Prairie
Cedar	West Water	Sixth
Randall	Chestnut	Vliet
Twenty-second	Vliet	Cold Spring Ave.
Cold Spring Ave.	Twenty-first	Twenty-second
Prairie	Twenty-fourth	Twenty-seventh
Twenty-sixth	State	Chestnut
Twenty-fifth	State	Chestnut
Alley in Block 23	Twelfth	Summer

Making a total length of improved streets and alleys of 8,263 lineal feet, which required:

Cubic yards of excavation	34,919
Cubic yards of filling	9,579
Cubic yards of gravel	2,174
Square yards of gutter paving	5,842
Lineal feet of sidewalk planking	6,093

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1883 the following street improvements have been completed:

SIXTH WARD.

STREET.	FROM	To
Cape.	Point	Dock
South alley in block 101.....	Sixth.....	Seventh.....
Alley in block 12.....	Lloyd.....	Beaubian.....
Alley in block 3.....	Beaubian	North.....
Alley in block 22.....	Harmon.....	Lloyd.....

Making a total length of improved streets and alleys of 2,730 lineal feet, which required:

Cubic yards of excavation	3,280
Cubic yards of filling.....	720
Cubic yards of gravel.....	
Square yards of gutter paving	4,078 $\frac{2}{3}$
Lineal feet of sidewalk planking.....	2,170

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1883 the following street improvements have been completed:

NINTH WARD.

STREET.	FROM	TO
Twentieth	Vine.....	Brown.....
Twenty-sixth	Cherry	Galena.....
Twenty-second	Clarke.....	Elm.....
Alley in block 218.....	N. line of E. and W. alley..	Vine.....
Twenty-sixth	Galena.....	Lisbon Plank Road.....
Walnut	Twenty-seventh.....	E. line of Mayhew's Add'n ..
Galena.....	W. line of Hopkins' subdiv'n	Twenty-second

Making a total length of improved streets and alleys of 4,488 lineal feet, which required:

Cubic yards of excavation.....	9,674
Cubic yards of filling.....	2,877
Cubic yards of gravel.....	2,632
Square yards of gutter paving	3,209
Lineal feet of sidewalk planking.....	4,765

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1883 the following street improvements have been completed:

TENTH WARD.

STREET.	FROM.	TO.
Eighth	Walnut	N. line of the S. W. $\frac{1}{4}$ Sec 20
Locust	Seventh	Ninth
Seventeenth	Centre	Hopkins Road
Alley in block 19	Lloyd	Beaubian
Ninth	Locust	Chambers

Making a total length of improved streets and alleys of 3,669 lineal feet which required:

Cubic yards of excavation	17,251
Cubic yards of filling	112
Cubic yards of gravel	96
Square yards of gutter paving	877 $\frac{1}{3}$
Lineal feet of sidewalk planking	3,894

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1883 the following street improvements have been completed:

THIRTEENTH WARD.

STREET.	FROM.	TO.
Richard.....	Center	Burleigh
Alley in Block 11.....	North Ave	Lee
Alley in Block 8	Lee	Wright
Sixth.....	N. line of Field's Subdiv'n.....	Chambers.....
Chambers	Fourth	Fifth
Chambers	$\frac{1}{4}$ Section line.....	150 ft. W. of Sixth.....
Locust	$\frac{1}{4}$ Section line.....	150 ft. W. of Sixth.....

Making a total length of improved streets and alleys of 6,396 lineal feet, which required:

Cubic yards of excavation.....	6,403
Cubic yards of filling	884
Cubic yards of gravel.....	296
Square yards of gutter paving	3,150
Lineal feet of sidewalk planking	5,624

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1883 estimates were prepared for improving the following streets:

SECOND WARD.

STREET.	FROM.	TO.
Twentieth.....	Prairie.....	Chesnut.....
Fifth.....	Poplar.....	Vliet.....

Making a total length of street to be improved of 875 lineal feet, which require:

Cubic yards of excavation	1,756
Cubic yards of filling.	280
Cubic yards of gravel	613 4-9
Square yards of gutter paving	864
Lineal feet of sidewalk planking	595

STREET IMPROVEMENTS.

WEST DIVISION B.

During the year 1883 estimates were prepared for improving the following alleys:

NINTH WARD.

STREET.	FROM.	TO.
S. alley in Block 16.....	Summer.....	Thirteenth.....
Alley in Blocks 218 and 3.....	Eighteenth.....	Nineteenth.....
S. Alley in Block 14.....	Eighteenth.....	Nineteenth.....

Making a total length of alleys to be improved 772 lineal feet, which requires:

Cubic yards of excavation.....	697
Square yards of paving.....	674 1-9

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1883 estimates were prepared for improving the following streets and alleys.

TENTH WARD.

STREET.	FROM	TO.
Clarke	Seventh	Eighth
Twelfth	Walnut	Beaubian
Louis Ave.	Lee	Centre
Alley in block 13	N W. Alley	W. line of lots 18 and 25

Making a total length of streets and alleys to be improved of 5,667 lineal feet, which requires:

Cubic yards of excavation	5,766
Cubic yards of filling	1,569
Cubic yards of gravel	1,372
Square yards of gutter paving	1,809 2-9
Lineal feet of sidewalk planking	3,756.71

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1883 estimates were prepared for improving the following streets:

THIRTEENTH WARD.

STREET.	FROM	TO
Sixth	Centre.....	N. line of Field's Subdiv'n...

Making a total length of streets to be improved of 975 lineal feet, which requires:

Cubic yards of excavation.....	2,587
Cubic yards of filling.....	372
Cubic yards of gravel	
Square yards of gutter paving	
Lineal feet of sidewalk planking.....	

STREET IMPROVEMENTS.

During the year 1883, in West Division—B.

WARD.	Sq. Yds. of Cedar Block Paving.	Square Yards of McAdam Paving.	Lineal Feet of Stone Curbing.	Lineal Feet of Wood Curbing.
Second	2,208	.....	406	.....
Second	1,130 5-9	.....	360	.....
Second	3,676 2-9	.....	1,251	.....
Sixth .....	.....	3,866 $\frac{2}{3}$	.....	.....

The above new cedar block and McAdam pavement was laid as follows:

Second Ward, Sixth Street from Cedar Street to State Street.

Second Ward, Cedar Street from Sixth Street to Seventh Street.

Second Ward, Cedar Street from West Water Street to Sixth Street.

Sixth Ward, Cape Street from Point Street to Dock Street.

STREET PAVEMENTS.

During the same year estimates were prepared for paving the streets in the following Wards:

WARD.	Sq. Yds. of Cedar Block Paving.	Sq. Yds. of Wood Block Paving.	Lineal Feet of Stone Curbing.	Lineal Feet of Wooden Curbing.
Second	1,899 7-9	.....	920	.....
Tenth.....	8,721 1-9	.....	.....	4524

RECAPITULATION

Of work completed in the West Division—B.

Total length of streets and alleys improved during the year 1883 was 25,546 lineal feet, or $4\frac{828}{1000}$ miles, which required:

Cubic yards of excavation, 71,527, at a cost of	\$14,305 40
Cubic yards of filling, 4,593, at a cost of	918 60
Cubic yards of gravel, 5,198 at a cost of	4,933 10
Square yards of gutter paving, 8,335 1-9, at a cost of.	3,750 80
Square yards of alley paving, 14,172, at a cost of	6,377 40
Lineal feet of sidewalk planking, 22,546, at a cost of	3,636 50
Square yards of cedar block paving, 7,014 2-9, at a cost of.....	6,453 09
Square yards of macadam paving, 3,866 $\frac{1}{3}$, at a cost of.....	4,832 91
Lineal feet of stone curbing, 2,017, at a cost of	1,069 01
Total cost.....	\$46,276 81

RECAPITULATION

Of work estimated in the West Division B.

The total length of streets and alleys for which estimates were prepared in the year 1883, is 8,289 lineal feet or $1\frac{569}{1000}$ miles, which requires:

Cubic yards of excavation	10.806
Cubic yards of filling.....	2,221
Cubic yards of gravel	1,985 4-9
Square yards of gutter paving	2,673 2-9
Square yards of alley paving	674 1-9
Lineal feet of sidewalk planking.....	4,351 71
Square yards of cedar block paving.....	10,620 8-9
Lineal feet of stone curbing.....	920
Lineal feet of wood curbing.....	4,524

PROFILES

Have been made for establishing grade on the following streets during the year 1883:

STREET.	FROM	TO	WARD.	LINEAL FT. OF STREET.
Liberty	Hopkins Road.....	Bet. Sec. 17 and 18	Tenth.....	499.50
Fifteenth.....	Wright.....	Center	Tenth.....	1,325
Water	Poplar	Walnut.....	Sixth.....	2,331
Alleys in Block 238.....	Twenty-third	Twenty-fourth.....	Second.....	838
Alley in Block 11.....	North.....	Lee.....	Thirteenth.	600
Alleys in Block 28.....	Vliet.....	Cherry	Sixth.....	740
	Fourth	Fifth		
Total length.....				6,333.50

Or $1 \frac{196}{1000}$ miles.

The following is a list of permanent corner-stones planted by the Engineer of West Division B, for boundary surveys:

- N. W. corner of Seventh and Harmon streets.
- N. W. corner of Eleventh and Prairie streets.
- S. E. corner of Twenty-fourth and Galena streets.
- S. E. corner of Lee and Weil streets.
- S. E. corner of Clarke and Booth streets.
- S. W. corner of Lee and Richard streets.
- N. W. corner of Lee and Richard streets.
- S. W. corner of Wright and Richard streets.
- N. W. corner of Wright and Richard streets.
- S. E. corner of Lee and First streets.
- N. E. corner of Lee and First streets.
- S. E. corner of Wright and First streets.
- S. W. corner of Wright and First streets.

Respectfully submitted,

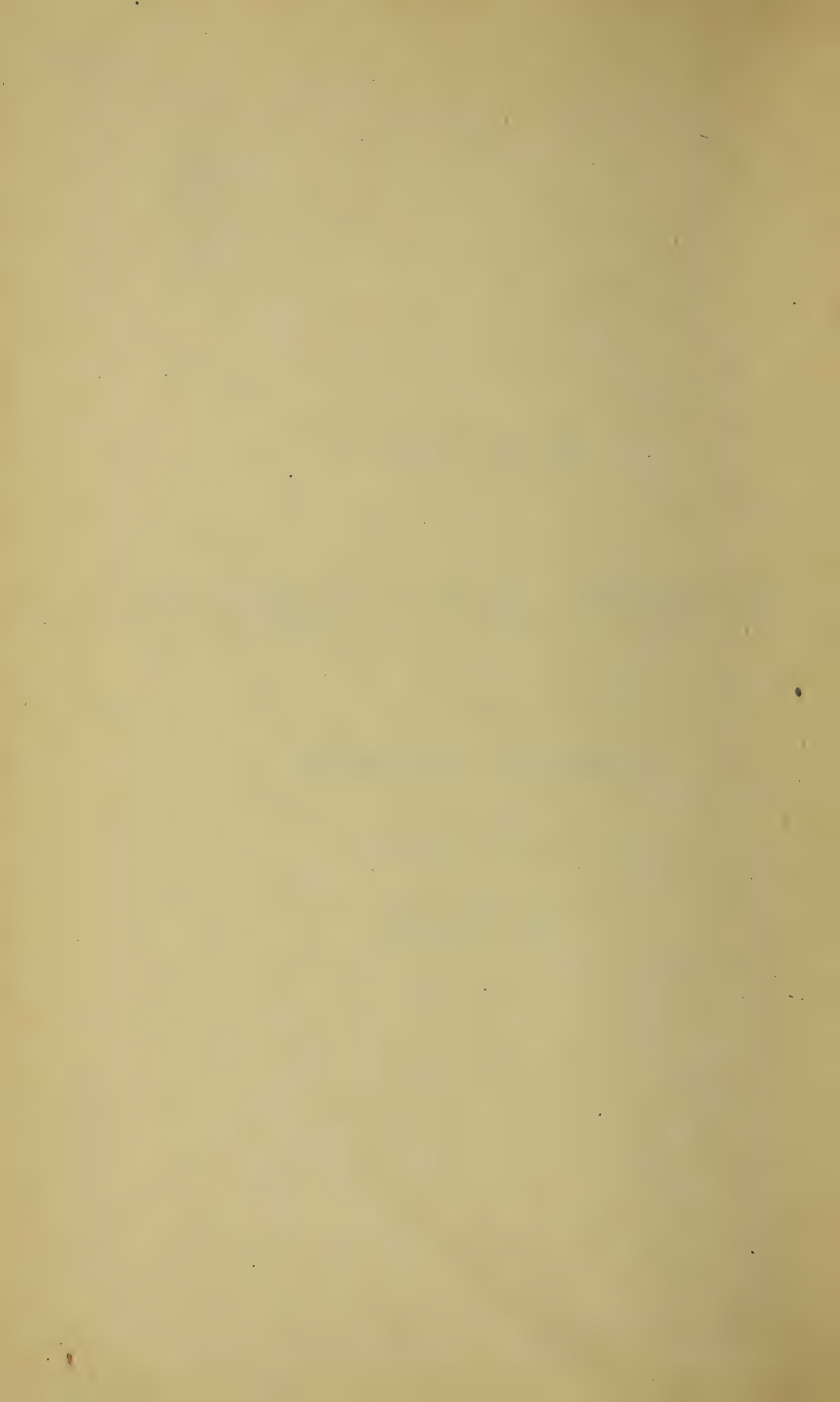
NICOLAUS ENGEL,

Ass't City Engineer.

To GEO. H. BENZENBERG,

City Engineer.

REPORT
OF
STREET IMPROVEMENTS
IN THE
SOUTH DIVISION
FOR THE YEAR
1883.



REPORT OF
STREET IMPROVEMENTS
IN THE
SOUTH DIVISION.

During the year 1883 the following street improvements have been completed in the Fifth Ward:

STREET.	FROM.	TO.
Reed	Oregon.....	Lake.....
Lake.....	Reed.....	Clinton.....
Florida	Clinton.....	C. M. & St. P. R'y track....

Making a total length of improved streets of 971 lineal feet, which required:

Square yards of stone paving.....4,053

STREET AND ALLEY IMPROVEMENTS.

During the year 1883 the following street and alley improvements have been completed in the Eighth Ward:

STREET.	FROM	To
Pierce.....	Fourth Ave.....	Eighth Ave.....
Nineteenth Ave.	National Ave.....	Pierce.....
Washington Ave.....	National Ave.....	Railroad.....
West N. and S. alley block 173	Washington.	Mineral.....
Alley, block 169.....	Fourth Ave.....	Fifth Ave.....
Alley, block 9.....	Second Ave.....	Third Ave.....
Alley, block 10.....	Third Ave.....	Fourth Ave.....

Making a total length of improved streets and alleys of 5,088 lineal feet, which required:

14,030 cubic yards of excavation,	{ at a cost of.....	\$2,960 90
6,387 cubic yards of filling,		
6,607 cubic yards of gravel,		3,561 76
3,728 square yards of gutter paving, at a cost of.....		1,492 49
2,752 square yards of alley paving, at a cost of.....		1,516 77
1,964 lineal feet of sidewalk planking, at a cost of		526 16

Of the above amount of work that done on Nineteenth Avenue was not ordered, but was contracted for privately by the property owners fronting thereon.

STREET AND ALLEY IMPROVEMENTS.

During the year 1883 the following street and alley improvements have been completed in the Eleventh Ward:

STREET.	FROM	To
Union.....	Railroad	West line of W. Pt. S. add. . .
Becher.	Seventh Ave.....	W. line of B. R. & B. Subdiv
Tenth Ave	Forest Home Ave.....	Lincoln Ave
Seventh Ave	Becher	Add. line.....
N. and S. alley in block 144...	Lapham.....	Mitchell.
E. and W. alley, block 132....	First Ave.....	Second Ave
N. and S alley, block 132.....	East and West alley block 132	Lapham.....
N. and S. alley, block 3.....	Mitchell.....	Windlake Ave.....
Rogers.....	Ninth ave.....	140 feet w. of Ninth Ave

Making a total length of improved streets and alleys of 5,153 lineal feet, which required:

2,810 cubic yards of excavation, }	at a cost of.....	\$967 46
1,282 cubic yards of filling, }		
3,992 cubic yards of gravel, at a cost of.....		2,390 25
4,144 square yards of gutter paving, at a cost of.....		2,022 37
3,796 square yards of alley paving, at a cost of.....		2,213 30
6,312 lineal feet of sidewalk planking, at a cost of.....		1,770 48

STREET AND ALLEY IMPROVEMENTS.

During the year 1883 the following street and alley improvements have been completed in the Twelfth Ward:

STREET.	FROM	To
Ward	Kinnickinnic Ave.....	Alexander Ave
Roger's	Grove.....	Greenbush
North and South alley blk 149	Lapham.....	East and West Alley blk. 149.
Alley blocks 10 and 129	Orchard.....	Lapham.....

Making a total length of improved streets and alleys of 1,976 lineal feet which required:

6,975 Cubic yards of excavation	} at a cost of.....	\$1,590 96
2,894 Cubic yards of filling		
942 Cubic yards of gravel, at a cost of		602 90
553 Square yards of gutter paving, at a cost of		276 50
2,485 Square yards of alley paving, at a cost of		1,357 56

STREET AND ALLEY IMPROVEMENTS.

During the year 1883 estimates were prepared for improving the following alley in the Fifth Ward:

STREET.	FROM	TO
Alley blocks 3 and 82	Clinton.....	Barclay

Making a total length of alley to be improved 315 lineal feet, which requires:

Cubic yards of excavation	73
Cubic yards of filling.....	75
Cubic yards of gravel.....	315
Square yards of paving.....	945

STREET AND ALLEY IMPROVEMENTS.

During the year 1883 estimates were prepared for improving the following streets and alleys in the Eighth Ward:

STREET.	FROM	TO
Nineteenth Ave	National Ave.....	Railroad
Eighteenth Ave	Pierce.....	National Ave.....
Muskego road.....	Pierce.....	Fourth Ward line.....
Alley in block 1 W. P. add....	Seventh Ave.....	West line of W. P. add....
Alley in block 2 W. P. add....	Railroad	Madison
Alley in block 3 W. P. add....	Fifth Ave	Sixth Ave.....
Alley block 4 W. P. add.....	Fourth Ave.....	Fifth Ave
Alley in block 13.....	Sixth Ave	Seventh Ave.....
Alley in Block 9.....	Second Ave	Third Ave.....
Alley in Block 10.....	Third Ave.....	Fourth Ave
Alley in block 169.....	Fourth Ave.....	Fifth Ave.....
West Alley block 173.....	Washington	Mineral.....
East Alley block 173	Washington.....	Mineral.....
East and West alley block 173.	East N. and S. Alley blk. 173	West N. and S. Alley blk. 173
Alley, Block 176.....	Ninth Ave.....	Tenth Ave
Eighteenth Ave	National Ave.....	Railroad

Making a total length of streets and alleys to be improved of 10,873 lineal feet, which requires:

Cubic yards of excavation.....	12,890
Cubic yards of filling	18,201
Cubic yards of gravel.....	5,754
Cubic yards of broken stone	3,050
Square yards of gutter paving	6,701
Square yards of alley paving.....	7,705
Lineal feet of sidewalk planking	9,635

STREET AND ALLEY IMPROVEMENTS.

During the year 1883 estimates were prepared for improving the following streets and alleys in the Eleventh Ward:

STREET.	FROM.	TO.
Cross.....	Pearl.....	Eleventh Ave.....
Orchard.....	Fourth Ave.....	Fifth Ave.....
Rogers.....	Fifth Ave.....	Eighth Ave.....
Mitchell.....	Washington Ave.....	Muskego Ave.....
Washington Ave.....	Railroad.....	Lincoln Ave.....
Orchard.....	Third Ave.....	Fourth Ave.....
Seventh Ave.....	Becher.....	N. line of Harmeyer's add'n.
N. and S. alley Block 135.....	Orchard.....	Lapham.....
N. and S. alley Block 137.....	Orchard.....	Lapham.....
N. and S. alley Block 138.....	Orchard.....	Lapham.....
N. and S. alley Block 140.....	Lapham.....	Mitchell.....
N. and S. alley Block 141.....	Lapham.....	Mitchell.....
N., E. and W. alley Block 141.....	Fifth Ave.....	Sixth Ave.....
S., E. and W. alley Block 141.....	Fifth Ave.....	Sixth Ave.....
N. and S. alley Block 143.....	Lapham.....	Mitchell.....
N., E. and W. alley Block 144.....	Second Ave.....	Third Ave.....
S., E. and W. alley Block 144.....	Second Ave.....	Third Ave.....
Alley, Block 134.....	Orchard.....	Lapham.....
N. and S. alley Block 11.....	Maple.....	Burnham.....
E. and W. alley Block 11.....	Sixth Ave.....	Fifth Ave.....
N. and S. alley Block 139.....	Orchard.....	Lapham.....

Making a total length of streets and alleys to be improved of 17,001 lineal feet, which will require:

Cubic yards of excavation	42,709
Cubic yards of filling.....	4,620
Cubic yards of gravel.....	16,625
Square yards of gutter paving	9,894
Square yards of alley paving.....	13,542
Lineal feet of sidewalk planking	13,594

STREET AND ALLEY IMPROVEMENTS.

During the year 1883 estimates were prepared for improving the following streets and alleys in the Twelfth Ward:

STREET.	FROM	To
Ward	Kinnickinnic Ave.....	Alexander Ave
Rogers.....	Grove.....	Greenbush.....
Burnham.....	Greenbush.....	First Ave.....
Lincoln Ave.....	Adams.....	Howell Ave

Making a total length of street to be improved of 5,300 lineal feet, which require:

Cubic yards of excavation.....	5,260
Cubic yards of filling.....	15,919
Cubic yards of gravel.....	3,090
Square yards of gutter paving.....	1,166
Lineal feet of sidewalk planking.....	2,070

STREET PAVEMENTS,

Were laid during the year 1883, in the South Division as follows:

WARDS.	Square Yards of Granite Paving.	Square Yards of Medina Sand Stone.	Square Yards of Cedar Block Pavement.	Square Yards of Gutter Pavement Relaid.	Square Yards of Alley Pavement Relaid.
Fifth	402	3,651	3,626	.....	.....
Eighth .....	.....	.....	.....	.....	3,387
Eleventh .....	.....	.....	.....	676	.....

The above cedar block pavement was laid on Lake street, from 160 feet East of Barclay street to South Water street and on Grove street from Virginia street to Florida street.

Granite and Medina Sand Stone pavement was laid on Reed street from Oregon street to Lake street.

Medina Sand Stone pavement was laid on Lake street from Reed street to Clinton street, and on Florida street, from Clin- to the C., M. & St. Paul Railway track; this pavement was laid by the Fifth Ward to replace a section of wood block pavement that had been worn out.

RECAPITULATION

Of work completed and estimated in the South Division.

Total length of streets and alleys improved during the year 1883, was 13,188 lineal feet, or $2\frac{498}{1000}$ miles, which required:

23,815 Cubic yards of excavation.....	} at a cost of.....	\$5,519 32
10,563 Cubic yards of filling.....		
11,541 Cubic yards of gravel, at a cost of.....		6,554 91
8,425 Square yards of gutter paving, at a cost of.....		3,791 36
9,033 Square yards of alley paving, at a cost of.....		5,087 63
4,053 square yards of Granite and Medina sandstone pavement, at a cost of.....		8,592 36
8,276 Lineal feet of sidewalk planking, at a cost of.....		2,296 64
Total cost		\$31,842 22

Total length of streets and alleys for which estimates were prepared in the year 1883, is 33,489 lineal feet, or $6\frac{343}{1000}$ miles, which requires:

Cubic yards of excavation	60,932
Cubic yards of filling	38,815
Cubic yards of gravel	25,784
Cubic yards of broken stone	3,050
Square yards of gutter paving	17,761
Square yards of alley paving.....	22,192
Lineal feet of sidewalk planking	25,299

PROFILES

Have been made and levels run for establishing grade on the following streets and alleys during the year 1883.

STREET.	FROM	TO	Lineal feet.
Garden	Rogers	Bechers	666
Burnham	First Ave.	Greenbush	889
Alley blk 153 and lots K A	Lapham	Mitchell	674
Alley blk 152 and lots I, J,	Lapham	Mitchell	674
Alley block 143	Burnham	Maple	344
South Alley block 139.....	Seventh Ave	Eighth Ave	270
Alley block 135	Maple	Mitchell	416
E. and W. Alley block 138.	First Ave.	Grove	432
N. and S. Alley block 138.	E. and W. alley block 138	S. line lots 4 and 1, blk 138	115
N. and S. Alley block 139..	Mitchell	Lapham	651
N. and S. Alley block 143.	Mitchell	Lapham	651
Alley blk 153 and lots K A	Mitchell	Lapham	675
Alley blk 134 and lots F, E	Mitchell	Maple	454
Total length			6,911

New profiles made for $1\frac{3.09}{1000}$ miles.

The following is a list of permanent corner-stones planted by the Engineer of South Division for boundary surveys:

- S. W. corner of Mineral street and Tenth avenue.
- N. W. corner of Windlake avenue and Ninth avenue.
- S. W. corner of Pierce street and Sixth avenue.
- S. W. corner of Orchard street and Bismark avenue.
- N. W. corner of Walker street and Ninth avenue.
- N. E. corner of Washington street and Seventh avenue.
- S. E. corner of National and Tenth avenue.
- S. W. corner of Forest Home and Tenth avenue.
- N. E. corner of Cross and Pearl street.
- N. E. corner of Bismark avenue and Becher street.
- North line of Burnham's canal and center of Muskego road.
- S. E. corner of S. W. $\frac{1}{4}$ Section 5.

Respectfully submitted,

FRED. SCHNEIDER,

Ass't City Engineer.

of the same.

SEWERS.—DIMENSIONS.				TOTAL LENGTH OF SEWERS.		COST OF SEWERS CHARGEABLE TO.		COST OF INSPECTION.	TOTAL COST OF SEWERS.
CLAY.				BRICK.	PIPE.	PROPERTY.	FUND.		
12	18	15	12						
				188	.....	\$300 80	\$273 20	\$25.00	\$599.00
				1409	.....	2,067 59	4,230 64	138.25	6,436.48
160					450	632 37	168 63	19.25	820.25
288					576	749 36	126 16	24.00	899.52
					325	324 09	48 81	36.00	409.75
911					911	1,144 90	148 72	60.00	1,353.62
276					276	368 10	92 82	21.00	481.92
288					576	835 14	06	27.00	862.20
288					576	787 86	30 06	39.00	856.92
300					600	761 60	402 40	63.00	1,227.00
				185	.....	141 20	567 10	24.50	732.80
				525	54	723 20	1,385 23	84.00	2,192.43
277					332	418 32	76 53	40.50	535.35
277					1542	1,844 64	190 80	105 00	2,140 44
3065				2307	6218	\$11,100 02	\$7,741 16	706.50	19547.68

8,525

\$19,547.68

or, $1 \frac{615}{1000}$ miles.

SOUTH SEWERAGE DISTRICT.

Statement showing the number of lineal feet of Sewers built during the year 1883, and cost of the same.

DATE OF CONTRACT.	NAME.		LOCATION OF SEWERS.			MANHOLES.	BRICK SEWERS.			PIPE SEWERS.—DIMENSIONS.						TOTAL LENGTH OF SEWERS.		COST OF SEWERS CHARGEABLE TO.		COST OF INSPECTION.	TOTAL COST OF SEWERS.
							DIMENSIONS.			CEMENT.			CLAY.								
	CONTRACTOR.	INSPECTOR.	STREET.	FROM	TO		42	36	30	18	15	12	18	15	12	BRICK.	PIPE.	PROPERTY.	FUND.		
1883.																					
April 6	Dan'l O'Driscoll.	P. Hanley.	Orchard.	110 ft. w of Eighth ave	Ninth ave.	2		188								188		\$300 80	\$273 20	\$25.00	\$599.00
6	D. W. Purtell.	Jos. Dunn.	Pierce.	Fifteenth ave.	Eleventh ave.	6	1409									1409		2,067 59	4,230 64	138.25	6,436.48
6	Robt. Chambers.	Jos. Dunn.	Walker.	Eleventh ave	E. line of M. Keenan's subdiv'n.	5				290	160					450		632 37	168 63	19.25	820.25
June 12	Dan'l O'Driscoll.	E. F. Herzberg.	Sixth avenue	Lapham	Orchard	6				288	288					576		749 36	126 16	24.00	899.52
12	Dan'l O'Driscoll.	Geo. Gregory.	South Bay.	Mound.	Winchester.	4				248	77					325		324 09	48 81	36.00	409.75
12	Dan'l O'Driscoll.	Geo. Gregory.	Mitchell.	Grove.	Third ave.	10						911				911	1,144 90	148 72	60.00	1,353.62	
14	Thos. Lee.	E. F. Herzberg.	Orchard.	Seventh ave.	Sixth ave	3						276				276	368 10	92 82	21.00	481.92	
30	James Markey	Levi Hains.	Greenbush	Lapham	Orchard	6					288	288				576	835 14	06	27.00	862.20	
30	Thos. Lee.	M. McGrath	First avenue	Becher	Rogers	6					288	288				576	787 86	30 06	39.00	856.92	
July 21	Robt Chambers.	Levi Hains	Third avenue.	Mitchell.	Lapham	6				300	300					600	761 60	402 40	63.00	1,227.00	
Aug. 14	Chas. Bland	M. Ryan	Ninth avenue.	N. line of alley, b'k 7 and 8, B & R subd	Orchard	1		77	108							185		141 20	567 10	24.50	732.80
30	D. W. Purtell.	Jos. Dunn.	Muskego avenue.	Railroad	Bow.	4			525	54						525	54	723 20	1,385 23	84.00	2,192.43
Sept 11	Chas. Roediger.	E. F. Herzberg.	Pierce.	Fifth ave	Fourth ave	4					55	277				332		418 32	76 53	40.50	535.35
27	D. W. Purtell	By. Abert.	Muskego avenue	Bow.	Mitchell	6				566	699	277				1542		1,844 64	190 80	105.00	2,140.44
Total						69	1409	265	633	814	2339	3065				2307	6218	\$11,100 02	\$7,741 16	706.50	19547.68

2,307

6,218

8,525

\$19,547.68

145-150

8,525 feet

or, 1 ⁸¹⁵/₁₀₀₀ miles.

	COST OF SEWERS CHARGEABLE TO		COST OF INSPECTION.	TOTAL COST OF SEWERS.
	Property.	Fund.		
East	\$1,252 84	\$556 52	\$96 00	\$1,905 36
West	9,996 95	22,842 27	1,084 50	33,923 72
West	2,080 89	3,345 91	312 00	5,738 80
South	11,100 02	7,741 16	706 50	19,547 68
	24,430 70	34,485 86	2,199 00	\$61 115 56
\$61,115 56				

RECAPITULATION.

DISTRICT.	BRICK SEWERS—DIMENSIONS.				PIPE SEWERS—DIMENSIONS.						TOTAL LENGTH OF SEWERS.		COST OF SEWERS CHARGEABLE TO		COST OF INSPECTION.	TOTAL COST OF SEWERS.
					CEMENT.			CLAY.								
	96	42	36	30	18	15	12	18	15	12	BRICK.	PIPE.	Property.	Fund.		
East Sewerage District						442	700					1,142	\$1,252 84	\$556 52	\$96 00	\$1,905 36
West Sewerage District B	929			1461	725	2638	4108				2,390	7,471	9,996 95	22,842 27	1,084 50	33,923 72
West Sewerage District A				752	798		694				752	1,492	2,080 89	3,345 91	312 00	5,738 80
South Sewerage District.....		1409	265	633	814	2339	3065				2,307	6,218	11,100 02	7,741 16	706 50	19,547 68
Total	929	1409	265	2846	2337	5419	8567				5,449	16,323	24,430 70	34,485 86	2,199 00	\$61 115 56
5,449					16,323					21,772			\$61,115 56			

21,772 lineal feet, or $4\frac{123}{1000}$ miles.

Total length of sewers up to 1883, $106\frac{832}{1000}$ miles, at a cost of \$1,227,248 87.

Total length of sewers during 1883, $4\frac{123}{1000}$ miles, at a cost of 61,115 56.

Total,..... $110\frac{755}{1000}$ miles, at a cost of \$1,288,364 43.

TABLE

Showing the location of Catch Basins with sewer ventilator
built during 1883.

A—WEST SEWERAGE DISTRICT.

S. E. corner of Fourth and Hadley street.
S. W. corner of Fourth and Hadley street.
N. E. corner of Fourth and Centre.
S. E. corner of Fourth and Wright.
S. E. corner of Fifth and Wright.
S. E. corner of Sixth and Wright.
N. E. corner of Seventh and Clarke.
S. W. corner of Fourth and Clarke.
S. W. corner of Seventh and Lee street.
N. W. corner of Seventh and Lee street.
S. E. corner of Seventh and Lee street.
N. E. corner of Seventh and Lee street.
N. W. corner of Seventh street and North avenue.
S. E. corner of First street and North avenue.
N. E. corner of First street and North avenue.
S. E. corner of Hubbard street and North avenue.
N. W. corner of Hubbard street and North avenue.
N. W. corner of Island avenue and Walnut street.
S. W. corner of Island avenue and Walnut street.
N. E. corner of Reservoir avenue and Booth street.
S. E. corner of North avenue and Buffum street.
S. W. corner of First and Walnut street.
N. W. corner of First and Walnut street.
N. E. corner of Fourteenth street and Grand avenue.
S. W. corner of First street and Reservoir avenue.
S. E. corner of Ninth and Sycamore street.
S. E. corner of Tenth and Sycamore street.

S. E. corner of Twenty-seventh and State street.
N. E. corner of Twenty-seventh and State street.
S. E. corner of Twenty-seventh and Chestnut street.
N. E. corner of Twenty-seventh and Chestnut street.
S. E. corner of Twenty-seventh and Vliet street.
N. E. corner of Twenty-seventh and Vliet street.
S. E. corner of Twenty-seventh and Cherry street.
N. E. corner of Twenty-seventh and Cherry street.
S. E. corner of Twenty-seventh and Galena street.
S. E. corner of Seventh and Cedar street.
N. E. corner of Twentieth and Cherry street.
N. E. corner of Twentieth and Galena street.
S. E. corner of Twentieth and Galena street.
N. E. corner of Twentieth and Clybourn street.
N. W. corner of Twentieth and Clybourn street.
N. E. corner of Nineteenth and Clybourn street.
N. W. corner of Nineteenth and Clybourn street.
N. W. corner of Thirtieth and Clybourn street.
N. E. corner of Eleventh and Cedar street.
S. W. corner of Tenth and Hibernia street.
N. E. corner of Clermont and Fowler street.
N. W. corner of Clermont and Hinman street.
E. side of Seventh street, at first alley N. of Chestnut street.
S. side of Vliet street, at alley between Fifteenth and Sixteenth street.
N. W. corner of Reservoir avenue and Booth street.
Total, 52 new catch basins.

B—EAST SEWERAGE DISTRICT.

S. E. corner of Jackson and Biddle streets.
S. W. corner of Jackson and Menomonee streets.
S. W. corner of Highland place and Astor street.
S. E. corner of Cambridge avenue and Irving place.
S. E. corner of Cambridge avenue and Windsor place.
N. W. corner of Cambridge avenue and Windsor place.
S. E. corner of Mason street and Broadway.
S. W. corner of Ogden and Van Buren streets.
N. W. corner of Hamilton and Franklin streets.
S. E. corner of Biddle and Marshall streets.
N. E. corner of Biddle and Marshall streets.
S. E. corner of Sobieski and North Water streets.
N. E. corner of River and Knapp streets.

N. W. corner of Windsor place and Prospect avenue.

1 on E. side of Prospect avenue near Rail Road crossing.

2 on E. side of Prospect avenue between Keene and Knapp streets.

1 on W. side of Prospect avenue between Keene and Knapp streets.

1 on E. side of Sobieski street between Hamilton and North Water streets.

1 on W. side of Sobieski street between Hamilton and North Water streets.

1 on W. side of North Water street 20 feet N. of angle near Pleasant street.

1 on S. side of Michigan street near River.

Total, 22 new catch basins.

C—SOUTH SEWERAGE DISTRICT.

S. E. corner of Grove and Rogers street.

S. E. corner of Greenbush and Lapham streets.

N. W. corner of Reed and Scott streets.

S. W. corner of Grove and Oregon streets.

S. E. corner of Seventh avenue and Orchard street.

N. W. corner of First avenue and Becher street.

E. side of First avenue between Rogers and Becher streets.

W. side of First avenue between Rogers and Becher streets.

S. E. corner of South Bay and Winchester streets.

S. W. corner of South Bay and Winchester streets.

E. side of Kinnickinnic avenue between Maple street and Rail Road crossing.

W. side of Kinnickinnic avenue between Maple street and Rail Road crossing.

N. E. corner of Pierce street and Fifteenth avenue.

S. E. corner of Pierce street and Fifteenth avenue.

N. W. corner of Pierce street and Fifteenth avenue.

4 on Pierce street between Eleventh and Fifteenth avenues.

N. E. corner of Muskego avenue and Bow street.

N. W. corner of Muskego avenue and Bow street.

S. E. corner of Muskego avenue and Bow street.

S. W. corner of Muskego avenue and Bow street.

N. E. corner of Muskego avenue and Arrow street.

S. E. corner of Muskego avenue and Arrow street.

S. W. corner of Muskego avenue and Arrow street.

E. side of Muskego avenue between Arrow and Mitchell streets.

W. side of Muskego avenue between Arrow and Mitchell streets.

S. E. corner of Hanover and Florida streets.

S. W. corner of Clinton and Becher streets.

N. side of National avenue between First and Second avenues.

S. W. corner of Third avenue and Madison street.

S. E. corner of Third avenue and Lapham street.

N. E. corner of Third avenue and Lapham street.
 S. W. corner of Oregon and Barclay streets.
 N. E. corner of Muskego avenue and Mitchell street.
 N. W. corner of Muskego avenue and Mitchell street.
 Florida street in alley between Reed and Hanover streets.

Total, 38 new catch basins.

RECAPITULATION.

A. West Sewerage District.....	52	catch basins.
B. East Sewerage District.....	22	“ “
C. South Sewerage District.....	38	“ “
Total.....	112	“ “

TABLE

Showing location of Catch Basins with sewer ventilators rebuilt
 during 1883.

A—WEST SEWERAGE DISTRICT.

S. E. corner of Third and Cedar street.
 S. W. corner of Third and Cedar street.
 S. E. corner of Fifth and Cedar street.
 S. W. corner of Fifth and Cedar street.
 S. W. corner of Sixth and Cedar street.
 S. E. corner of Sixth and Cedar street.
 N. W. corner of Sixth and Cedar street.
 N. E. corner of Sixth and Cedar street.
 S. W. corner of Seventh and Cedar street.
 N. W. corner of Seventh and Cedar street.
 N. E. corner of Tenth and Fowler street.
 S. E. corner of Tenth and Fowler street.
 N. E. corner of Tenth and Sycamore street.
 N. W. corner of Third and Sherman street.
 N. E. corner of Eleventh street and Grand avenue.

Total, 15 catch basins rebuilt.

B—EAST SEWERAGE DISTRICT.

- N. W. corner of Broadway and Wisconsin street.
- N. E. corner of Jefferson and Lyon street.
- N. E. corner of Division and River street.
- N. W. corner of Division and River street.
- N. W. corner of Pleasant and North Water street.
- S. W. corner of Pleasant and North Water street.
- S. W. corner of Farwell avenue and Brady street.
- N. E. corner of Ogden and Cass street.
- S. E. corner of Lyon and Cass street.
- S. W. corner of Lyon and Cass street.
- N. E. corner of Buffalo and East Water street.
- N. W. corner of Buffalo and East Water street.
- S. E. corner of Buffalo and East Water street.
- S. W. corner of Buffalo and East Water street.
- N. E. corner of Detroit and East Water street.
- N. W. corner of Detroit and East Water street.
- S. E. corner of Detroit and East Water street.
- S. W. corner of Detroit and East Water street.
- N. E. corner of Huron and East Water street.
- S. E. corner of Huron and East Water street.
- S. W. corner of Huron and East Water street.
- S. E. corner of Michigan and East Water street.
- N. E. corner of Martin and Van Buren street.
- N. E. corner of Jackson and Biddle street.
- N. E. corner of Van Buren and Biddle street.
- S. E. corner of Van Buren and Biddle street.
- N. W. corner of Van Buren and Biddle street.
- N. E. corner of Cass and Biddle street.
- S. E. corner of Cass and Biddle street.
- N. W. corner of Cass and Biddle street.
- N. W. corner of Marshall and Biddle street.
- S. W. corner of Franklin and Hamilton street.
- S. E. corner of Franklin and Hamilton street.
- E. side of Doty street, near Arlington place.

Total, 34 catch basins rebuilt.

C—SOUTH SEWERAGE DISTRICT.

- N. E. corner of Reed and Lake streets.
- N. W. corner of Reed and Lake streets.

S. E. corner of Reed and Lake streets.
 S. W. corner of Reed and Lake streets.
 S. W. corner of Clinton and Lake streets.
 N. W. corner of Clinton and Lake streets.
 N. E. corner of Clinton and Florida streets.
 N. W. corner of Clinton and Florida streets.
 S. E. corner of Clinton and Florida streets.
 S. W. corner of Clinton and Florida streets.
 N. W. corner of Reed and Walker streets.
 N. W. corner of Hanover and Pierce streets.
 N. W. corner of Scott street and Sixth avenue.
 S. W. corner of Scott street and Sixth avenue.
 S. E. corner of Ninth and National avenues.
 N. E. corner of Clinton and South Water streets.

Total, 16 catch basins rebuilt.

RECAPITULATION.

A. West Sewerage District	15	catch basins
B. East Sewerage District	34	" "
C. South Sewerage District	16	" "
Total	65	" "

REPORT OF THE ENGINEER

OF THE

North Point Pumping Station,

FOR THE YEAR ENDING

DECEMBER 31st, 1883.

REPORT OF THE ENGINEER OF THE NORTH POINT PUMPING WORKS

For the year ending December 31, 1883.

NORTH POINT PUMPING STATION, }
MILWAUKEE January 3d, 1884. }

To G. H. BENZENBERG, Esq., *City Engineer*:

SIR:—I herewith present report of the operations of machinery at this station for year ending December 31st, 1883.

All the machinery has been in good servicable condition during the year, only such repairs were done as became necessary to the proper keeping of such machines, and were made by the regular force employed at the works.

Engines number 1 and 2 coupled were operated 1,721 hours and 30 minutes making 1,237,590 revolutions pumping 1,203,311,485 gallons of water.

Engines number 1 or 2 running single 3,157 hours and 35 minutes, revolutions made, 2,477,780; water pumped, 1,104,470,435 gallons.

Engine number 3 ran 6,316 hours, making 9,187,530 revolutions, pumping 3,190,094,166 gallons of water.

Making a total pumpage for the three engines of 5,397,876,086 gallons; or an average per day of 14,788,701 gallons; average per day previous year, 14,690,413 gallons; increase in daily average, 98,288 gallons.

The total amount of coal consumed at this station for all purposes was 8,789,300 pounds, the amount of ashes taken from furnaces was 1,247,521 pounds. Per cent. of ashes in coal $14\frac{19}{100}$.

The average lift of water was $161\frac{27}{100}$ feet, giving an average yearly duty for all the engines, calculated from the coal consumed at the work of 82,751,885 pounds of water lifted one foot, for every 100 pounds of coal consumed.

By examining the tabulated statements you will see the amount of work done by each engine monthly.

Amount of coal on hand January 1st, 1883, and received from—

	TONS.	LBS.
N. W. Fuel Co. Contract of 1883	2,139.	500
Coal received from R. P. Elmore & Co., 1883	3,556.	1690
Total	5,696.	190
Total coal consumed at works	4,394.	1300
Coal on hand December 31st, 1883	1,301.	890
Cotton waste on hand		460
Lubricating compound		220

GALLONS

Lard oil	80
Cylinder oil	50
Castor oil	10
Machinery oil	80
Head Light oil	50
Boiled Linseed oil	21

WORK SHOP.

Amount of work done on lathe and drilling machine during 1883:

	DAYS.	HOURS
Fitting 18 new indicators for elevators	17	2
Turning hydrant valves and other work for distribution	14	2½
Machine work for repairs No. 1 and 2 engines	22	
Machine work for repairs No. 3 engine	22	
Machine making and repairing tools for works	9	½
Machine work on stairs, platforms and gallery	11	
Total time worked on machines during the year	95	5

Statement showing Number of Hours Pumping with each Engine, Number of Revolutions and average number per Minute, Water Pressure, Depth in Pump Well and Lake for year ending December 31st, 1883.

MONTHS 1883.									
	H.	M.	Number of hours pumping. No. 1 & 2 Engines coupled.	H.	M.	Number of hours pumping. No. 1 or 2 Engine single.	Number of hours pumping. Engine. No. 3	H.	M.
January.....
February.....
March.....
April.....
May.....
June.....
July.....
August.....
September.....
October.....
November.....
December.....
Totals and Averages..	1,721.30	3,157.35	6,316.00	1,237.590	2,477.780	9,187.530	12.00	13.00	24.24
	57.36	9.03	13.33						

Statement giving head of water in feet, coal consumed in pounds, total quantity of water pumped and daily average for 1882 and 1883, and average duty of three engines for the year ending December 31st, 1883,

MONTHS 1883.	Head of Water in feet.	Coal consumed for pumping in pounds	Coal consumed for banking fires in pounds.	Coal consumed for Starting fires in pounds.	Total coal consumed in pounds.	Total amount of ashes in pounds.	Total quantity of water pumped.	Average quantity of water pumped daily 1883.	Average quantity of water pumped daily 1882.	Average duty of three engines calculated from total coal consumed.
January.....	166.47	847,200	1,200	2,100	850,500	115,143	537,863,850	17,348,511	14,409,228	87,896,593
February.....	165.67	751,800	600	5,400	757,800	104,840	490,090,908	17,503,353	14,910,090	89,465,398
March.....	163.75	740,000	1,500	7,200	748,700	101,157	469,811,923	15,155,223	15,414,044	85,790,355
April.....	155.77	784,100	2,100	6,600	792,800	116,238	443,961,513	14,798,717	13,981,563	72,675,141
May.....	162.85	663,100	4,800	6,900	674,800	102,177	434,330,002	14,010,645	13,753,429	87,312,720
June..	164.41	686,100	5,700	13,500	705,300	98,379	450,083,345	15,002,778	14,606,287	87,396,147
July.....	163.63	710,000	6,600	12,600	729,200	114,254	448,685,910	14,473,739	14,860,847	84,070,800
August.....	160.57	695,100	4,800	7,800	707,700	97,610	445,846,565	14,382,147	14,935,400	84,467,008
September.....	162.10	733,500	2,700	12,300	748,500	113,974	455,250,445	15,175,015	15,381,423	82,354,303
October.....	155.60	765,700	4,200	7,500	777,400	94,086	420,574,411	13,566,916	14,898,527	70,200,135
November.....	156.20	623,100	4,200	6,600	633,900	92,395	388,980,394	12,966,013	14,305,398	80,033,989
December.....	159.30	648,000	4,500	10,200	662,700	97,268	412,456,816	13,303,058	14,834,265	82,772,216
Total and average....	161.37	8,647,700	42,900	98,700	8,789,300	1,247,521	5,397,876,086	14,788,701	14,600,413	82,751,885

GENERAL CONDITION OF THE WORKS.

Principal work done during the year at North Point Pumping Station:

From the first of the year till the end of March. Engines number 2 and 3 pumped the necessary supply of water to the city. From January 1st to 15th fitted up iron stair from platform of No. 3 to gallery of No. 2 engine, and cut away the connection from No. 1 and 2 engine to side gallery; this is a great improvement, as previous to the erection of this stair the only access to the galleries of engines was by circular stair and side galleries. This connection from engines to buildings transmitted the vibrations of machinery to walls; it was also a source of anxiety to the employes, as it gave easy access to visitors from side to the engine gallery at the risk of meeting with accident. A central iron stair is now used exclusively by the men operating the machinery, giving access to all parts of either engine.

Repairs made on No. 1 engine were: Refitted piston rings low pressure cylinder, examined and refitted all brass boxes on links and parallel rods, steam valves and lifting rods were taken out, and valve stems of high pressure cylinder turned down and fitted with metallic packing.

Number 1 and 2 engines were connected in the end of March, and supplied the city during the month of April, when all working parts of No. 3 engine were examined and found in good condition. On May 1st No. 2 engine was disconnected and the supply kept up by No. 1 and 3 engines till September 28th.

Principal work done on No. 2 engine during the year: Turned down high pressure valve stems and fitted metallic packing. Lined up valve chamber and pump, and run three new joints in connecting pipes, fitted new keys for holding down pump and fitted wrought iron braces on pump and valve chamber.

From August 14th to September 19th to make reservoir repairs, water was supplied direct to the city from pumps No. 1 and 3, engines running in day time and No. 3 keeping up the supply alone during night between the above dates. Engine No. 3 run continuously at an average speed in day-time of

twenty-eight revolutions, and during the night at an average speed of eighteen revolutions per minute.

Principal work done on No. 3 engine during the year: Enlarged feed pumps to supply feed water through heater when both pumps were working; lined up main pump and braced the same with wrought iron braces; made two new joints on valve chamber and pump; fitted drip cups around stuffing boxes high pressure cylinder and put new valve stem in low pressure cylinder.

All the engines are now in good servicable condition, number 1 and 3 supplying the city with water at present writing.

Other work done by the employes of this department during the year: Fitted up steam heaters in engine room and oil room; fitted up 18 indicators for water elevators; fitted up 24 new hydrant valves and repaired all hydrant valves for distribution; fitted new plunger and repaired 3 inch Worthington meter.

BOILERS.

Little work has been done to the boilers during the year, mostly on furnaces, putting in new braces and rivets where required; the boilers are now in good servicable condition. Owing to the reduction in water consumption for the past six months the boilers have been easier run and consequently are doing better than in the first part of the year, but in view of the fact that the increase in consumption is greatest in the winter months, and the boilers likely to give out when most needed, I would recommend the erection of a set of boilers as proposed in previous report for No. 3 engine, as soon as practicable.

BUILDINGS.

Nothing has been done to the buildings during the year, except some slate renewed and slight repairs to metal cornice where leaking, and roof over work-shop repaired and repainted. The stairs and stand-pipe will also receive a coat of paint during the winter, material being on hand for that purpose.

GROUNDS.

No improvements were made on grounds during the year. The grounds around tower and engine house, if laid out as a park, at slight cost, could be made a very attractive place and in keeping with the fine buildings and machinery at this station.

LAKE PIER AND CRIB.

A considerable portion of lake pier was washed away by severe storms in spring; this was repaired under contract during the summer. The recent storm

of December 22d, also carried away a large number of two inch plank and 4x6 caps, this is being at present repaired by the carpenter at the works, and is expected to be finished before any trouble is experienced from ice in intake pipe.

On February 27th intake pipe got clogged with ice when head in reservoir was reduced to about ten feet; this was the only serious trouble experienced during the season. This clogging of pipe is not produced by ice floating into pipe, as crib is well protected from floating ice. From careful observations I am satisfied that ice is formed in pipe itself, as this pipe is laid on bottom of lake and uncovered from a depth of six feet of water, and consequently the ice forming on piles grounds on the pipe in shallow water. On entering the pipe the water is near the freezing point, and in passing through this portion of pipe with ice resting on it, congeals. If this part of the pipe exposed was covered in shallow water, our trouble from freezing would be very little. As the covering of this pipe would entail considerable expense, a temporary inlet-pipe as proposed by you, if put in, would insure a steady supply during the winter months.

TOOLS AND MATERIAL

At North Point Pumping Station.

Turning Lathe, complete.....	1
Turning Tools.....	14
Lathe Dogs.....	4
Driver.....	1
Mandrils.....	2
Drilling Machine, complete.....	1
Twist Drills.....	18
Common Drills.....	18
Hand Drill.....	1
5x8 Engine for driving Tools.....	1
Grind Stones.....	2
Set Machine Taps and Dies, $\frac{1}{4}$ to $1\frac{1}{4}$.	
Set Pipe Taps and Dies, $\frac{1}{4}$ to $1\frac{1}{2}$.	
Pipe Tongs.....	12
Pipe Cutter.....	1
Open Wrenches.....	24
Close Wrenches.....	14
Monkey Wrenches.....	5
Stop Cock Wrenches.....	2
Hand Hammers.....	2
Files, assorted.....	30
Chisels.....	16
Ratchets.....	3
Ratchet Drills.....	20
Boring Clamp.....	1
Sledge Hammers.....	3
Iron Rammer.....	1
Bench Vise.....	1
Pipe Vice.....	1
Hand Vice.....	1

Steel Bars	3
Packing Screws	5
Soldering Iron	1
Spirit Level	1
Surveyor's Level	1
Plumet	1
Hand Saw	1
Screw Drivers	2
Plane	1
Square	1
Chopping Axes	2
Calking Mallet	1
Calking Tools	2
Inch Auger	1
Crank Augers	4
Oilstone	1
5 Ton Block	1
2 Ton Block	1
16 lb Block, single	1
8 lb Block, single	3
6 lb Block, single	1
10 lb Block, double	2
8 lb Block, double	4
6 lb Block, double	1
Line for above Blocks, feet	800
Oil Tank, 150 gallons	1
Oil Tanks, 50 gallons	2
5 Gallon Tin Can	2
2 Gallon Tin Can	4
1 Gallon Tin Can	1
2 Gallon Brass Can	2
Filling Cans, brass	4
Squirt Cans, brass	6
Hand Lamps	6
Boiler Lamps	4
Bracket Lamps	36
Table Lamp	1
Lanterns	3
Corn Brooms	8
Paint Brush	1
Water Pails	4
Thermometers	3

25 foot Ladder.....	1
20 foot Ladder.....	2
8 foot Step Ladder.....	1
5 foot Step Ladder.....	1
Tables.....	2
Chairs.....	7
Settees.....	3
Cuspadores.....	3
Firing Tool Sets.....	2
Coal Scales, 5 ton.....	1
Coal Scales, $\frac{1}{2}$ ton.....	1
Iron Barrows.....	3
2 inch Hose, feet.....	150
$\frac{3}{4}$ inch Hose, feet.....	100
Portable Forge.....	1
Anvil.....	1
Vice.....	1
Tongs.....	11
Cold Chisels.....	3
Swedges, top and bottom.....	8
Fullers.....	4
Flatters.....	3
Punchers.....	3
Heading Tools.....	10
Sledge.....	1
Hand Hammer.....	1
Steel Stamp.....	1
Burning Brand.....	1
Bars $\frac{1}{4}$ inch round Iron.....	2
Bars $\frac{3}{8}$ inch round Iron.....	2
Bars $\frac{1}{2}$ inch round Iron.....	3
Bars $\frac{5}{8}$ inch round Iron.....	5
Bars $\frac{3}{4}$ inch round Iron.....	6
Bars $\frac{7}{8}$ inch round Iron.....	2
Bars 1 inch round Iron.....	3
Bars $1\frac{1}{8}$ inch round Iron.....	1
Bars $1\frac{1}{4}$ inch round Iron.....	1
Sheets of 1-16 inch Iron.....	2
Bars Lathe Tool Steel.....	$1\frac{1}{2}$
Bars Chisel Steel.....	$1\frac{1}{2}$
Blacksmith Coal, ton.....	$\frac{1}{2}$
Shovel.....	1

Spade.....	1
Paving Hammer.....	1
Iron Rammer.....	1
Wooden Rammer.....	1
Scythe, Sickle, Lawn Mower.....	1
3 inch Wrought Pipe, feet.....	40
3 inch Valves.....	2
6 inch Lift Pump.....	1
5 inch Force Pump, broken.....	1
Rakes.....	2
Hoes.....	3
Edger.....	1
Pruning-knife.....	1
Barrows.....	2
Boat.....	1
Oars.....	2
Stone Cart.....	1
36 inch Cast Iron Pipe, (2 broken).....	6
36 inch Cast Iron Curves.....	2
30 inch Cast Iron Pipes.....	3½
20 inch Cast Iron Pipes.....	6
36 inch gate for Inlet.....	1

Respectfully submitted,

THOS. McMILLAN, *Engineer.*

REPORT OF THE WEST SIDE PUMPING WORKS.

*For the year ending December 31st, 1883.*WEST SIDE PUMPING STATION, }
MILWAUKEE, January 6th, 1884. }TO G. H. BENZENBERG, ESQ., *City Engineer.*

The report of the Engineer at the West Side Pumping Station is herewith submitted for the year ending December 31st, 1883.

The engines were in operation 8,682 hours. The total number of revolutions made, was 23,031,782 and the total quantity of water pumped during the year was 293, 609,156 gallons, or an average of 804,408 gallons per day, the average pressure being 40 pounds.

Amount of coal consumed for pumping was 510,850 pounds and for starting fires 4,250 pounds, the total amount of coal consumed for all purposes was 539,137 pounds. The amount of ashes taken from the furnace was 87,398 pounds or 16.9 per cent. of the coal consumed for pumping.

Following is the amount of coal received during the year and on hand, also waste and oils. December 31st, 1883.

Coal in shed Dec. 31st, 1882.....	30	Tons	1613	lbs.
Received of N. W. Fuel Co.....	95	"	110	"
Received of R. P. Elmore & Co.....	229	"	1350	"
Total	355	"	1073	"
Total coal consumed	269	"	1137	"
Coal on hand, Dec. 31st, 1883.....	89	"	936	"
Cotton waste			375	"
Machine oil.....			25	gal.
Cylinder oil.....			20	"
Headlight oil			5	"

CONDITION OF THE WORKS.

The engines worked satisfactorily until October 22d, when the air pumps gave out and failed to do duty. The engines were stopped, and after disconnecting the disabled parts found the bucket valves cut in two, which was due to the long wearing of the valves, being the original ones in use since the engines were in operation. The construction of the engines making it necessary to take up and disconnect most of the lower machinery it thereby accidentally happened that the condenser elbow broke. While awaiting the new casting all repairing (such as refitting of brasses, examining and making new joints, and getting the lower machinery in a more suitable condition for future repairs) was done by the engineers at the station. Other necessary repairs referred to in my last year's report could not be done as they required too long a delay.

October 25th steam was put on and from that time to the close of the year the engines worked without interruption. But the pumps are not powerful enough, to supply the district and should be relieved by an additional pump.

The boilers were, and are at present, in a good servicable condition, only the fireplaces needed light repairing during the year and will probably want a set of new grate bars.

The painting of the building which was entirely worn off was repainted and the slate roof repaired, giving it a neat appearance.

The following is a monthly statement showing the number of hours pumping, the number of revolutions and the average per minute, the amount of coal consumed, and the amount of ashes taken from furnace.

MONTHS.	Number of hours pumping.	Total number of Revolutions.	Coal consumed for pumping.	Coal for starting fires.	Total amount of ashes.	Average number of Revolutions per minute.
January.....	744	2,132,735	45,800	300	7,530	47.77
February.....	659	1,891,360	40,800	300	8,089	47.32
March.....	744	1,923,520	46,200	400	8,089	43.04
April.....	719	1,796,640	42,650	300	8,001	43.08
May.....	743	1,815,508	44,550	300	7,632	40.72
June.....	720	1,858,815	42,500	350	8,221	43.02
July.....	744	1,876,048	43,000	350	7,470	42.02
August.....	744	2,081,640	43,600	350	6,741	46.63
September.....	720	1,979,219	41,950	400	6,654	45.81
October.....	683	1,847,242	38,750	400	6,246	45.07
November.....	718	1,884,830	40,300	400	6,156	43.75
December.....	744	1,944,225	40,750	400	6,569	43.55
Total.....	8,682	23,031,782	510,850	4,250	87,398	44.20

INVENTORY OF TOOLS AND MATERIALS.

Set of Machine Taps and Dies from	$\frac{1}{4}$ to 1 inch.
Set of Pipe Dies and Stock from	$\frac{1}{4}$ to 1 inch.
Set of Pipe Tongs from	$\frac{1}{4}$ to 2 inch.
Set of 12 Wrenches from	$\frac{1}{2}$ to 2 inch.
Monkey Wrenches	2
Tap Wrenches	1
Ratchet	1
Brace	1
Hatchet	1
Drawing Knife	1
Hand Saws	2
Pipe Cutter	1
Cam Wrench	1
Breast-drill	1
Shears	1
Jack	1
Files, assorted	13
Planes	2
Wood Chisels	3
Screwdrivers	1
Extention Bit	1
Spirit Level	1
Hydrant Wrenches	3
Drills	12
Chisels	8
Caulking Tools	2
Crowbar	1
Pinch Bar	1
Tongs	4
Swedges, top and bottom	10

Forge and Anvil.....	1
Sledge	1
Vise	1
Lawn Mower	1
Rakes.....	1
Saw Horses.....	1
Lanterns	1
Soldering Iron.....	1
Step Ladder 7 feet	1
Water Pails.....	2
Grindstone ..	1
Hand Hammer	1
Socket Wrenches.....	3
Stop-cock Wrenches.....	2
Ladder 16 feet	1
Ladder 10 feet	1
Ladder 5 feet.....	1
Table Lamp.....	1
Leather	8 lbs.
White Lead	20 lbs.
Linseed Oil	2 gal.
Brass Oilers	3
Set of Brass Oilers	1
Oil Cans, $\frac{1}{2}$ gal.....	2
Flue Blower	1
Stoves and Pipes	3
Shovels	3
$\frac{1}{2}$ Ton Scale	1
Wheelbarrow	1
Coal Screen	1
Saw and Buck	1
Chopping Ax	1
Pully Block.....	1
Hose, 1 inch	40 feet.
Set of Firing Tools.....	1
10 Gallon Cans	2
5 Gallon Cans	2
Rubber Mats.....	2
Oil Tanks, 55 Gallon.....	2
Clock	1
Reflectors	3
Chairs	3

Table	1
Lantern Globes	2
Lamp Chimneys	6
Ink Stand	1
Brooms	5

STEAM FITTINGS.

Steam Pipe, 1 inch	10 feet.
Steam Pipe, $\frac{1}{2}$ inch	8 feet.
Steam Pipe, $1\frac{1}{2}$ inch	6 feet.
Nipples, from $\frac{3}{4}$ to $1\frac{1}{2}$ inch	12
Reducers	14
Couplings, $\frac{1}{2}$ to $1\frac{1}{2}$ inch	18
Caps, from $\frac{1}{4}$ to $1\frac{1}{4}$ inch	10
Plugs, from $\frac{1}{4}$ to $1\frac{1}{4}$ inch	40
Elbows, from $\frac{1}{4}$ to $1\frac{1}{4}$ inch	20
Unions, from $\frac{1}{4}$ to $1\frac{1}{4}$ inch	25
Solder	2 feet.

Respectfully,

GUS. R. MERKE, *Engineer.*

CITY ENGINEER'S OFFICE, }
MILWAUKEE, Feb. 1st, 1884. }

GEO. H. BENZENBERG, Esq.,

City Engineer.

I herewith submit statements of disbursements, and cost of maintenance and construction of Water Department; also showing streets in which water mains have been laid, water gates and hydrants set, and other statements, for the year ending December 31st, 1883.

H. W. WHITE,

Engineer's Clerk.

STATEMENT

Showing disbursements of Water Department from January 1st
to December 31st, 1883.

MAINTENANCE ACCOUNT.

PUMPING ENGINES, NORTH POINT.

Coal	\$32,301 83	
Packing and Gasket.....	173 48	
Lard, castor, headlight and machine oil.....	754 57	
Cotton waste, globe valves, gauge glasses, nuts, bolts, pipe, copper, brooms, oil cups, etc.....	602 04	
Boiler compound, files, emery cloth, white and red lead, iron, steel, etc	315 45	
Repairing engines and boilers.....	1,025 87	
Gas	482 11	
Pay of engineers, oilers, firemen, etc.....	12,437 80	
	<hr/>	\$48,093 15

PUMPING WORKS, NORTH POINT.

Pay of carpenter and yardman.....	\$1,114 47	
Time of men working on grounds.....	92 00	
Nails, glass, paint, locks, bolts, shovels, hose, etc.....	210 84	
Repairing roof and flooring for coal shed.....	85 79	
Wire screen and window guards water tower.....	21 50	
Repairing heaters and plumbing.....	32 75	
Repairing approach pier.....	2,196 03	
Making sidewalks.....	130 51	
Furniture.....	40 78	
	<hr/>	3,924 67

MACHINE SHOP, NORTH POINT.

Hand taps, files, machine taps, cutter, tongs, etc.....	39 54	
Amount forward.....		39 54
		52,057 36

Amount forward..... \$52,057 36

PUMPING ENGINES, WEST SIDE.

Wood and Coal.....	\$2,150 45	
Lard, Castor and Headlight Oil	257 82	
Packing, gasket, iron, stone, waste, soap, stove, coke, brooms, emery cloth and boiler compound.....	212 89	
Gas	199 72	
Repairing boilers and engines.....	66 29	
Pay of engineers and firemen	4,879 92	
	<hr/>	7,767 11

PUMP WORKS, WEST SIDE.

Repairing scales, painting building, repairing works, etc	\$110 98	
	<hr/>	110 98

RESERVOIR.

Pay of keeper and watchman.....	\$1,787 25	
Repairing stone work.....	3,779 33	
Nails, hinges, oil, coal, brooms, gauge glasses, repairing mower, table, chairs, etc.....	178 36	
New gate house and plan for park.....	57 62	
	<hr/>	5,802 56

NORTH STREET BRIDGE.

Pay of day and night men.....	960 00	
Repairing abutments, iron columns. etc	99 65	
	<hr/>	1,059 65

FERRULES AND BOXES.

Pay of tapper and assistant	\$1,260 00	
Ferrules	825 00	
Iron service boxes.....	96 00	
Horse and wagon for tapper	187 47	
New and repairing old tools, advertising, etc	87 15	
	<hr/>	2,455 62

DISTRIBUTION.

Hose, manuring hydrants, coal, coal shovels, files, salt, picks, rubber boots, repairing pumps	\$357 35	
Repairing indicators.....	60 42	
Repairing hydrants, new and repairing old tools.....	250 33	
Drain pipe, lumber, castings, 3 and 4 inch gates, lead, iron boxes and stop cock frames	647 66	
Shoeing horses, oats, corn, repairing wagon, harnesses, etc	202 92	
Night inspection and watching waste of water	695 03	
Pay of superintendent, caulkers, hydrant inspectors, etc.....	7,695 72	
	<hr/>	9,909 43
Amount forward.....		\$79,162 71

Amount forward.....		\$79,162 71
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WATER RATES AND DAMAGES.

For damages and water rates refunded.....	\$511 91	
	<hr/>	511 91

WATER METERS.

Taking off, setting and repairing meters.....	\$1,508 90	
Saw dust, fittings, gasket, packing, lead pipe, truck, tongs, pad-lock etc	392 50	
Meters, counters and repairs.....	108 05	
Meter boxes.....	51 39	
Meters.....	2,698 15	
Freight on meters	80 30	
	<hr/>	4,929 29

TELEPHONE LINE.

Rent of telephones.....	\$110 00	
	<hr/>	110 00

COLLECTORS OFFICE.

Time of men turning on and off water	\$720 10	
Coal, stove and pipe, desk, repairing lock, clock, directory and signal bell	120 17	
Making plats.....	51 00	
Postal cards, stamps, blank books, etc.....	291 60	
Pay of janitor.....	96 00	
Pay of collector, assessors, clerk, etc.....	7,742 05	
	<hr/>	9,020 92
Total maintenance		\$93,734 83

CONSTRUCTION ACCOUNT.

PUMPING ENGINE, NORTH POINT.

Final payment engine No. 3	\$6,571 97	
	<hr/>	\$6,571 97

NORTH POINT WORKS.

Plates, rods, posts, railing for stairs.....	\$221 04	
Gate for inlet.....	255 00	
Advertising.....	23 20	
	<hr/>	499 24

Amount forward		\$7,071 21
----------------------	--	------------

Amount forward	\$7,071 21
----------------------	------------

EXTENSION DISTRIBUTION.

Water pipe and castings.....	\$10,330 16	
Laying pipes and inspection	3,137 61	
Hydrants.....	649 00	
Water gates.....	315 00	
Water gate boxes.....	265 49	
Hauling water pipe	272 22	
Inspecting water pipe.....	243 00	
Water pipe assessment refunded.....	1,134 90	
Repaving gutters.....	32 30	
Pay of keeper of yard, brooms, wood testing hammer.....	889 75	
Advertising and printing	75 05	
	<hr/>	17,344 48
Construction Total.....		\$24,415 69
		<hr/>
Maintenance account.....		93,734 83
Construction.....		24,415 69
		<hr/>
Amount for 1883.....		\$118,150 52

STATEMENT

Of the actual cost of Maintenance and Construction of Water
Department from January 1st to Dec. 31st, 1883.

PUMPING ENGINES, NORTH POINT.

Dr.

To Cash expenditures.	\$48,093 15	
Stock on hand Jan. 1st, 1883	9,402 64	
Machine shop, repairing engines.....	154 00	
	<u>\$57,649 79</u>	

Cr.

Time engineer and helper in machine shop.....	\$334 25	
Stock on hand Dec. 31st, 1883.....	9,463 31	
	<u>9,797 56</u>	47,852 23

NORTH POINT WORKS.

To cash expenditures.....	\$3,924 67	
	<u>3,924 67</u>	3,924 67

MACHINE SHOP, NORTH POINT.

Dr.

To time machinist and helper.....	\$334 25	
Cash expenditures.....	39 54	
	<u>\$373 79</u>	

Cr.

Work done for distribution.....	\$110 08	
Work done for North Point engines	154 00	
Work done for North Point Works (const. acc't).....	38 50	
	<u>\$302 58</u>	71 21

Amount forward..... \$51,848 11

Amount forward..... \$51,848 11

PUMPING ENGINE, WEST SIDE.

Dr.

To cash expenditures.....\$7,767 11
 Stock on hand Jan. 1st, 1883..... 450 37
\$8,217 48

Cr.

Stock on hand, Dec. 31st, 1883..... 699 26
7,518 22

PUMPING WORKS, WEST SIDE.

To cash expenditures.....\$110 98
110 98

RESERVOIR.

Dr.

To cash expenditures.....\$5,802 56

Cr.

Grass sold..... 59 00
5,743 56

NORTH STREET BRIDGE.

To cash expenditures.....\$1,059 65
1,059 65

DISTRIBUTION.

Dr.

To cash expenditures.....\$12,365 05
 Service boxes on hand Jan. 1st, 1883 172 00
 Ferrules on hand Jan. 1st, 1883..... 404 20
 Machine shop work done..... 110 08
\$13,051 33

Cr.

By cash for ferrules, boxes and branch connections\$5,596 35
 Boxes on hand Dec. 31st 1883..... 133 60
 Ferrules 284 20
6,014 15
7,037 18

Amount forward..... \$73,317 70

Amount forward..... \$73,317 70

WATER METERS.

Dr.

To cash expenditures.....\$4,929 29
 Meters on hand Jan. 1st, 1883 1,022 60
 \$5,951 89

Cr.

By cash for meter rents and meters sold..... 1,085 23
 Meters on hand Dec. 31st 1883..... 1,576 20
 2,661 43
 3,290 46
 \$76,608 16

WATER RATES AND DAMAGES.

To cash expenditures \$511 91
 511 91

TELEPHONE LINE.

To cash expenditures..... \$110 00
 110 00

COLLECTOR'S OFFICE.

To cash expenditures..... \$9,020 92
 9,020 92
 Total cost..... \$86,250 99

CONSTRUCTION ACCOUNT.

PUMPING ENGINES, NORTH POINT.

To cash expenditures	\$6,571 97	
	<hr/>	6,571 97

NORTH POINT WORKS.

To cash expenditures	\$499 24	
To machine shop work done	38 50	
	<hr/>	537 74

EXTENSION DISTRIBUTION.

Dr.

To cash expenditures	\$17,344 48	
To stock on hand Jan. 1st, 1883	6,221 04	
	<hr/>	
Total	\$23,565 52	

Cr.

Stock on hand Dec. 31st, 1883	\$6,737 66	
	<hr/>	16,827 86
Total cost		<hr/> \$23,937 57

BRANCH CONNECTIONS.

Statement showing size and number of branch connections put in during the year 1883:

3 inch	7
4 inch	9
	<hr/>
Total	16

Statement showing size and number of branch connections inserted from August 21st, 1872, to December 31st, 1883:

2 inch	3
2½ "	1
3 "	138
4 "	65
6 "	20
8 "	1
<hr/>	
Total number branch connections	228

FERRULES.

Taps inserted in water mains for the year ending December 31st, 1883:

SIZE.	
¾ inch	22
½ inch	402
⅝ inch	406
¾ inch	81
<hr/>	
Total	911

Taps inserted in water mains from September 4th, 1872 to December 31st, 1883.

SIZE.	
¾ inch	1,301
½ inch	5,872
⅝ inch	2,451
¾ inch	386
<hr/>	
Total	10,010

WATER PIPE LAID DURING THE YEAR 1883.

WEST SIDE.

STREET.	FROM	To	6 in.	8 in.
			FEET.	FEET
Second.....	Beaubian	North.....	314	.....
Sherman	First	Island Ave.....	363	.....
Clybourn	Fourteenth	Twentieth		2109
Eighteenth	Clybourn.....	Point North	29	.....
Twentieth	Clybourn.....	Point North	35	.....
Eighth	Prairie	Chestnut	418	.....
Eighth	Mill	Walnut	677	.....
Teutonia	North Ave.....	Lot 19 Tenth Ward	592	.....
Sixteenth	Lot 15 block 256	Clybourn.....	390	.....
Seventeenth.....	389 S. of Grand Ave.....	Clybourn.....	266	.....
Buffum	North Ave	Lee		660
Twentieth	150 S. of Grand Ave.....	Clybourn.....	699	.....
First	Walnut	Sherman	480	.....
Galena	Third	Fourth	364	.....
Fourteenth	Cherry	Cold Spring Ave.....	1045	.....
Total			5672	2769

SOUTH SIDE.

STREET.	FROM	To	6 in.	8 in.
			FEET.	FEET
Walker.....	Fourth Ave.....	Sixth Ave.....	763	.....
Washington	Third Ave.....	Fourth Ave.....	375	.....
Washington	Walker's Point add.....	Eleventh	1354	.....
Howell Ave.....	Kinnickinnic	Lincoln Ave.....	172	.....
Second Ave.....	Railroad	Madison	412	.....
Total			3076	

STATEMENT

Showing the monthly average, depth and temperature, the greatest and least depth and temperature of water and temperature of air, at Kilbourn Park Reservoir, during the year 1883.

MONTH.	Average depth of water.	Greatest depth of water.	Least depth of water.	Average temper- ature of air.	Highest temper- ature of air.	Lowest temper- ature of air.	Average temper- ature of water.	Highest temper- ature of water.	Lowest temper- ature of water.
January	18.49	20.75	15.10	10.68	36	24	32.76	34	32
February	18.70	20.75	10.30	18.14	50	-16	32.97	33	32
March	19.08	20.85	16.55	29.20	59	3	33.32	34	33
April	18.38	20.70	13.50	42.76	70	22	39.46	46	33
May	18.18	21.00	15.00	48.32	76	36	44.63	51	42
June	18.51	20.75	15.45	62.49	84	46	51.38	54	40
July	18.81	21.05	15.00	69.26	92	54	61.15	65	58
August,.....	10.82	21.00	.60	67.95	89	54	65.64	74	61
September	16.50	20.80	2.35	58.35	86	38	58.93	66	46
October	16.12	20.55	14.05	48.72	76	32	52.13	64	46
November.....	16.02	19.05	12.85	36.53	62	4	42.92	50	34
December.....	16.68	19.70	14.40	24.42	52	-6	36.23	40	34

LOCATION OF HYDRANTS SET IN 1883.

WEST DIVISION.

N. E. corner Clybourn and Sixteenth streets.
 N. E. corner Clybourn and Seventeenth streets.
 N. E. corner Clybourn and Twentieth streets.
 N. E. corner Buffom and Lee streets.
 N. E. corner Eighth and Galena.
 Twentieth street, 150 feet S. of Grand avenue.
 S. E. corner Teutonia and Lee streets.

EAST DIVISION.

S. W. corner Milwaukee and North Water streets.

SOUTH DIVISION.

N. E. corner Washington street and Ninth avenue.
 N. E. corner Washington street and Tenth avenue.
 N. E. corner Second avenue and Washington street.
 N. W. corner Howell and Lincoln avenues.

RECAPITULATION.

East Division.....	1
West Division.....	7
South Division.....	4
Number set in 1883.....	12
Number set previous to 1883.....	794
Total	806

WATER GATES SET IN 1883.

WEST DIVISION.

STREET.	LOCATION.	6 inch.	8 inch.
Clybourn	W. line of Fourteenth.....		1
Eighteenth	N. line of Clybourn.....	1	
Nineteenth	N. line of Clybourn.....	1	
Twentieth	N. line of Clybourn.....	1	
Seventeenth	N. line of Clybourn.....	1	
Sixteenth.....	N. line of Clybourn.....	1	
Sherman	W. line of Island Avenue	1	
Eighth	S. line of Walnut.....	1	
Galena.....	E. line of Fourth.....	1	
Fifteenth	N. line of Clybourn.....	1	
First	N. line of Walnut	1	
Total		10	1

SOUTH DIVISION.

STREET.	LOCATION.	6 inch.	8 inch.
Walker	E. line of Sixth Ave.....	1	
Washington	E. line of th Ave.....	1	
Second Ave	N. line of Rail Road	1	
Total		3	

SUMMARY OF WATER GATES.

DIVISION.	6 inch.	8 inch.	12 inch.	16 inch.	20 inch.	24 inch.	30 inch.	36 inch.
East	127	24	4	2	8	.....	3	3
West.....	221	41	22	.....	4	2	4	.....
South.....	93	20	12	2	2	.....	.....	.....
Total.....	441	85	38	4	14	2	7	3

WATER GATES.

Set on line of pipe leading to hydraulic elevators, public buildings and manufactories, during the year 1883.

LOCATION.	3 inch.	4 inch.
A. H. Gardner, No. 380 East Water		1
No. 300 Broadway.....		1
Inbusch, No. 238 East Water	1	
H. S. Dodge, No. 341 Broadway.....		1
Bush & Co , East Water	1	
Milwaukee Hospital Cedar	1	
Bradley & Metcalf, East Water.....	1	
Rees Block, No. 136 West Water		1
New Park, Grand Ave.....		2
Mrs Follansbee, No. 376 Milwaukee.....		1
Filer & Stowell Co., Florida.....		1
Slocum, Reed	1	
Milwaukee National Bank, Michigan.....		1
Aug. Uihlein, Galena	1	
E. Schneider, No. 374 Broadway.....	1	
	7	9

RECAPITULATION.

	3 inch.	4 inch.	6 inch.
Number set during 1883.....	7	9	
Number set previous to 1883	114	80	6
	121	89	6

REPORT OF SUPERINTENDENT OF DISTRIBUTION,

OFFICE OF MILWAUKEE WATER WORKS, }
 January 2d, 1884. }

GEO. H. BENZENBERG, Esq.,

City Engineer.

I herewith submit report of work done by Distribution Department during the year 1883.

LEAKS REPAIRED IN WATER MAINS.

Joint of 6-inch main on Cape street, south of Dock street.
 Joint of 6-inch main on Biddle street, 75 feet east of Market street.
 Split in 6-inch main on Grand avenue, near bridge.
 Joint of 30-inch main on North street, intersection of Cramer street.
 Joint of 36-inch main, east of stand pipe at North Point.
 Joint of 6-inch main on Market street, 85 feet south of Oneida street.
 Joint of 8-inch main on East Water street, 83 feet south of Huron street.
 Joint of 30-inch main on Fourth street, 100 feet north of Lloyd street.
 Joint of 20-inch main on Fourth street, 50 feet north of Park place.
 Joint of 20-inch main in Prairie du Chien Railroad yards.
 Joint of 30-inch main on North street, 145 feet west of Oakland avenue.
 Broken pipe on Prairie street, 50 feet west of Eighth street, 6-inch main.
 Joint of 6-inch main on Market street, south line of Ogden street.
 Joint of 8-inch main on East Water street, 162 feet north of Martin street.

SUMMARY OF LEAKS.

Number of leaks in 6-inch mains.....	6
Number of leaks in 8-inch mains.....	2
Number of leaks in 20-inch mains.....	2
Number of leaks in 30-inch mains.....	3
Number of leaks in 36-inch mains.....	1
Total.....	14

BRANCH CONNECTIONS MADE.

For private use.....	4
For hydraulic elevators.....	9
For fountains.....	3
Total	16

WET CONNECTIONS MADE.

With 6-inch mains.....	27
With 8-inch mains.....	1
Total.....	28

MISCELLANEOUS.

Hydrants set by Distribution Department.....	1
Hydrants repaired	57
Hydrants drained.....	24
Hydrants exchanged.....	10
Hydrants moved to conform with curb.....	7
Hydrants cut out.....	4
New Hydrants set in service.....	11
Oak frames put on stop cock boxes.....	42
Stop cocks put in.....	3
Wooden stop cock boxes replaced by iron.....	2
Drinking hydrants set.....	2

NUMBER AND MAKE OF HYDRANTS IN USE.

LOCATION.	LOWRY.	STOWELL.	MOODY.	WOOD.	BROWN.	SHERIFF.	TOTAL.
East Side.....	4	86	19	64	24	18	215
West Side	3	199	58	57	32	25	374
South Side.....	2	157	38	14	4	2	217
Total.....	9	442	115	135	60	45	806

NUMBER OF HYDRANTS DRAINED.

East Side.....	107
West Side	227
South Side.....	129
Total	463

NUMBER OF HYDRANTS NOT DRAINED.

East Side.....	108
West Side	147
South Side.....	88
Total	343

WATER METERS IN USE.

WHERE SET.	SET.
At Tanneries.....	7
At Saloons, restaurants, etc	45
At Breweries and Distilleries	12
At Factories, etc	28
At Private Buildings	43
At Street Railway Stables	4
At Railway Companies, Stand Pipes, etc.....	9
At Livery Stables	28
At Laundrys, Dye Houses and Bakeries	13
At Bottling Departments	6
At Butcher Shops	9
At Flour Mills.....	1
At Malt Houses.....	4
At Hotels.....	2
At Bath Houses.....	2
At Barber Shops	8
<hr/>	
Total Number in use.....	221
Number owned by city	170
Number owned by Private Parties.....	51

SIZE AND MAKE OF METERS.

SIZE.	WORTHINGTON.	CROWN.	EQUITABLE.	TOTAL.
4 inch.....	4	....	....	4
3 "	17	3	....	20
2 "	6	2	....	8
1½"	17	....	....	17
1 "	30	6	....	36
¾ "	35	33	2	70
⅝ "	42	....	14	56
½ " .....	....	10	....	10
<hr/>				
Total.....	151	54	16	221

SIZE, MAKE, NUMBER AND DATE OF SETTING WATER METERS IN USE.

SIZE.	NUMBER SET.					TOTAL.	
	WORTHINGTON.		CROWN.		EQUITABLE.		
	1876-82	1883	1876-82	1883	1883	1876-82	1883
4 inch.....	4	....	....	....	....	4	....
3 ".....	13	4	3	....	....	16	4
2 ".....	5	1	....	2	....	5	3
1½ ".....	12	5	....	....	....	12	5
1 ".....	11	19	2	4	....	13	23
¾ ".....	14	21	23	10	2	37	33
⅝ ".....	4	38	....	....	14	4	52
½ ".....	....	....	....	10	....	....	10
Total.....	63	88	28	26	16	91	130

Total Number in use December, 31st, 1883221

METERS ON HAND DECEMBER 31st, 1883.

IN GOOD CONDITION.

SIZE.	WORTHINGTON.	CROWN.	EQUITABLE	BALL & FITTS.	TOTAL.
3 inch.....	3	.....	.....	.....	3
2 inch.....	5	.....	.....	.....	5
1½ inch.....	.....	.....	.....	.....	.....
1 inch.....	5	1	.....	.....	6
¾ inch.....	6	11	9	.....	26
⅝ inch.....	.....	.....	.....	.....	.....
½ inch.....	.....	4	.....	.....	4
Total.....	19	16	9	.....	44

METERS ON HAND.

BEING REPAIRED.

SIZE.	WORTHING- TON.	CROWN.	EQUITABLE.	BALL & FITTS.	TOTAL.
3 inch.....					
2 inch.....					
1½ inch.....					
1 inch.....		1		1	2
¾ inch.....		5		3	8
⅝ inch.....	1				1
½ inch.....					
Total	1	6		4	11

REPORT OF NIGHT INSPECTORS.

NUMBER INSPECTIONS.	NO. LEAKS.	NO. WILLFUL WASTE.	NO. REPAIRED.
3,845	337	117	395

INVENTORY OF TOOLS AND MATERIAL.

Derrick (14 feet)	1
Derrick (16 feet)	1
Set Wilsons Patent Block and Chain	1
Hydrant levers, oak.....	1
Socket wrenches for manhole covers.....	1
Service stop cock wrenches.....	4
Ladles	2
Gasket setters.....	1
Lamp rods	1
Grade poles.....	1
Set of grappling irons	2

Stop cock wrenches	6
Manure forks	1
Crowbars	2
Furnace, kettle and bar	1
Axes	1
Iron kettles	2
Sledges	2
Water pails	2
Gasket irons	2
Diamond points	25
Hammers	3
Caulking tools (sets)	2
Common lumber (feet)	200
Shovels	4
Hand axes	2
Oil can, 10 gallon	1
Oil can, 4 gallon	1
Oil can, 2 gallon	1
Oil can, 1½ gallon	1
Collars for hydrants	36
Red lights	3
Hardys	4
Pigs of lead	8
Wood hydrant stuffing box wrenches	2
Monkey wrenches	1
Steel chipping hammers	1
Brown Hydrant valve screws	4
Screw drivers	1
Gasket for seat of hydrant	6
Set screw wrenches for Stowell Hydrant etc.	4
Half-round file	1
Clay drain pipe, 3 inch (feet)	175
Clay bends, 3 inch	8
Iron hydrant plugs	2
Guards for hydrants	4
Stowell hydrant valves	15
Horse and harness	1
Wagon	1
Sleigh	1
Rubber boots (pairs)	7
Stowell & Wood Hydrant screws	31
Stowell hydrant stuffing box wrenches	1

Hydrant pumps and hose	7
Hydrant wrenches, steel.....	8
Marine pump	1
Rubber Hose, 2 inch, feet.....	300
Vise.....	1
Cross-cut saw.....	1
Hand-saws	2
Chains	4
Level	1
Trowel.....	1
Steel square.....	1
Stowell hydrant stuffing boxes.....	10
Grinding stone.....	1
Stowell hydrant tops.....	6
Platform scales (Fairbanks').....	1
Pressure gauges.....	2
Service stop cock boxes, iron.....	81
Ratchet	1
Lead pipe, 1 inch, feet.....	7
Lead pipe, $\frac{3}{4}$ inch, feet.....	29
Lead pipe, $\frac{5}{8}$ inch, feet.....	40
Lead pipe, $\frac{1}{2}$ inch, feet.....	40
Bent couplings, 1 inch, brass.....	20
Bent couplings, $\frac{3}{4}$ inch, brass	6
Bent couplings, $\frac{5}{8}$ inch, brass	27
Straight couplings, 1 inch, brass.....	2
Straight couplings, $\frac{3}{4}$ inch, brass	4
Straight couplings, $\frac{1}{2}$ inch, brass.....	8
Elbows, 1 inch, iron.....	11
Elbows, $1\frac{1}{2}$ inch, iron.....	3
Elbows, $1\frac{1}{4}$ inch iron	1
Elbows, $\frac{3}{4}$ inch iron	4
Elbows, $\frac{1}{2}$ inch iron	10
Couplings, 1 inch iron	6
Couplings, $\frac{3}{4}$ inch iron	11
Bushings, 1 inch to $\frac{1}{2}$ inch	21
Bushings, 1 inch	20
Bushings, 1 inch to $\frac{3}{4}$ inch.....	14
Nipples, 6 inches long	12
Nipples, 4 inches long	31
Nipples, 3 inches long	4
Unions, 3 inch.....	1

Unions, $\frac{3}{4}$ inch	4
Unions, $\frac{1}{2}$ inch	2
T's, $\frac{1}{2}$ inch	2
Iron pipe, 1 inch (feet)	6
Iron pipe, $\frac{3}{4}$ inch (feet).....	25

Respectfully submitted,

CHAS. J. TRAPSCHUH,

Supt. of Distribution.

S

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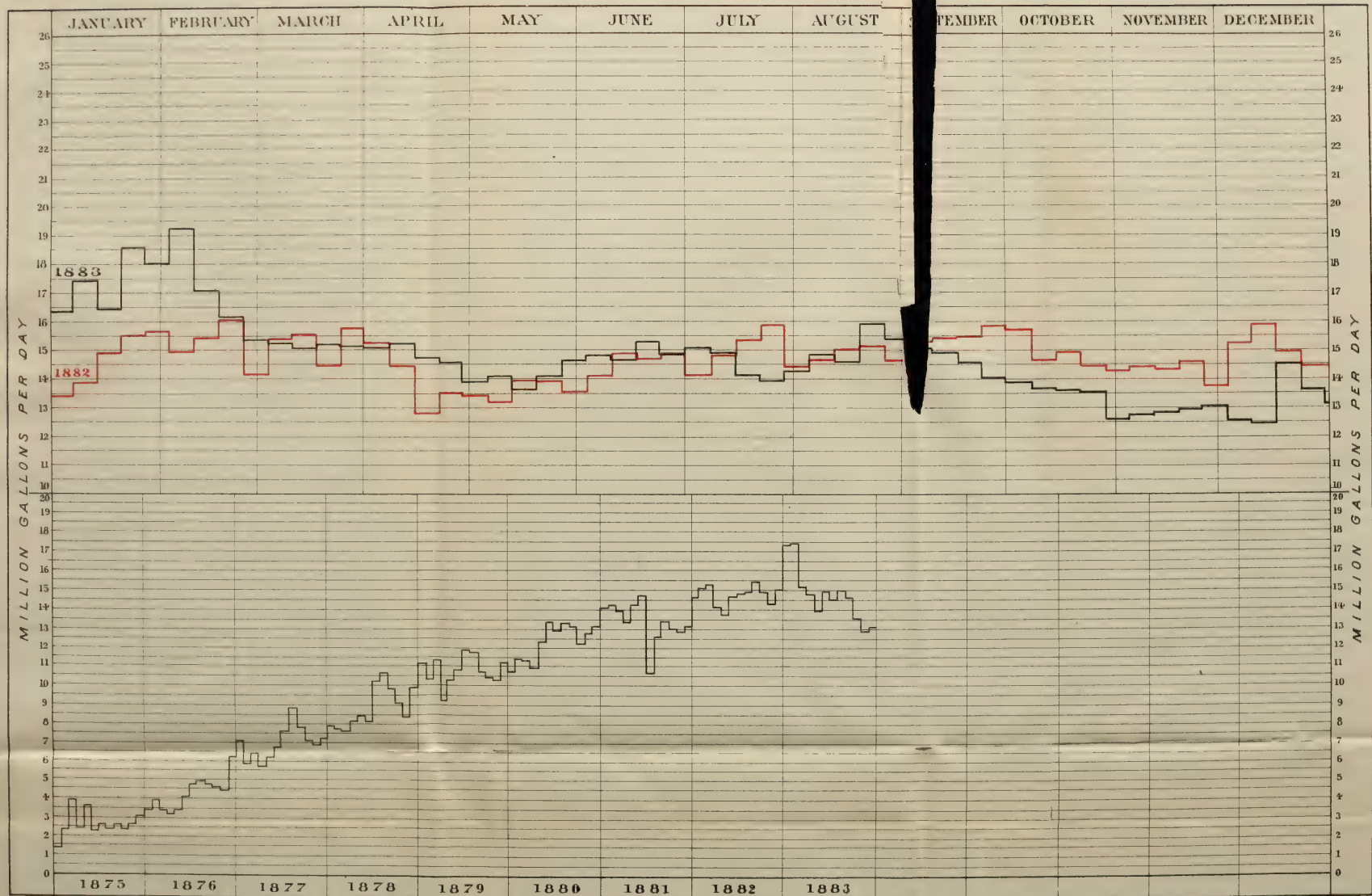
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OCTOBER



MILWAUKEE WATER WORKS

Diagram, Showing the average daily Consumption Per Week and per Month.



REPORT

OF THE

COLLECTOR OF WATER RATES

FOR THE YEAR

1883.

REPORT OF THE COLLECTOR OF WATER RATES.

OFFICE OF THE COLLECTOR WATER RATES, }
MILWAUKEE, February 14th, 1884. }

To the Honorable the Board of Public Works:

GENTLEMEN:—I herewith submit the within report, being the annual statement of the Water Department of the city of Milwaukee, for the year ending December 31st, 1883.

Respectfully,

B. F. COOKE, *Collector.*

STATEMENT

For the year ending December 31st, 1883.

Water Rates of 1882, uncollected Jan. 1st, 1883	\$2,049 58	
Water Rates of 1882 Extension of water service and fractional rates of 1882, uncollected Jan. 1st, 1883	144 40	
Water Rates of 1882 Metered water rates uncollected Jan. 1st, 1883 .	236 50	
	<hr/>	\$2,430 48
Water Rates—Assessed for the year 1883	\$124,451 55	
Water Rates—Extension of water service and fractional rates assessed for year 1883	5,878 22	
Water Rates—Metered rates assessed for the year 1883 .	51,955 10	
Water Rates Miscellaneous	2,109 03	
	<hr/>	184,393 90
Water Rates—Street Sprinkling	8,167 00	
Water Rates—Fire Hydrants	16,120 00	
	<hr/>	24,287 00
	<hr/>	208,680 90
Construction Account—Branch connections of 1882, un- collected Jan. 1st, 1883	737 68	
Construction Account—Branch connections of 1883	1,028 23	
	<hr/>	1,765 91
Ferrules and tapping	4,178 00	
Stop cock boxes sold	57 75	
Meter rents	223 28	
Meters sold	861 95	
Indicator sold	28 00	
Grass sold	59 00	
Scrap iron—Uncollected Jan. 1st, 1883	30 00	
Street sprinkling certificates of 1880 on hand Jan. 1st, 1883	40 75	
Interest on street sprinkling certificates	3 72	
Fines and Penalties	658 97	
	<hr/>	7,907 33
	<hr/>	\$219,018 71

Deposited with city treasurer	\$184,784	73
Delinquent Water Rates of 1882, returned to Comptroller Oct. 30, '83	2,020	47
Delinquent Water Rates of 1883, returned to Comptroller Oct. 30, '83	1,944	60
Delinquent Water Rates of 1883, extension to water service and fractional rates returned to Comptroller Oct. 30, 1883	15	00
Deductions on Water Rates of 1882, uncollected Jan. 1st, 1883	60	20
Deductions on Metered Water Rates of 1882 uncollected Jan. 1, '83	34	00
Deductions on Water Rates of 1883	1,881	30
Deductions on Water Rates of 1883, extension to water service and fractional rates	306	57
Cash refunded for sand tickets	10	00
Cash refunded for building permits	5	70
Cash refunded for ferrules	2	00
Cash refunded for penalties	1	15
	18	85
Street Sprinkling Department credit	8,167	00
Fire Hydrant Department credit	16,120	00
Street sprinkling certificates on hand	35	09
Water Rates of 1883 uncollected Dec. 31st, 1883	2,356	45
Construction account—Branch connections of 1882, uncollected Dec. 31st, 1883	267	96
Construction account—Branch connections of 1882, uncollected Dec. 31st, 1883	165	17
Scrap iron of 1882, uncollected Dec. 31st, 1883	30	00
	218,207	39
Balance on hand Dec. 31st, 1883	811	32
	\$219,018	71

Cash Statement for the year ending Dec. 31st 1883.

Cash for regular Water Rates	\$124,095	66
Cash for Meter Water Rates	52,157	60
Cash for Miscellaneous	2,109	03
Cash for Penalties and Fines	658	97
Cash for Construction Account	1,332	78
Cash for Grass sold	59	00
Cash for Meters sold	861	95
Cash for Indicators sold	28	00
Cash for Ferrules sold	4,136	00
Cash for Meter Rents	223	28
Cash for Stop Cock Boxes sold	99	75
Cash for Sprinkling Certificates	5	66
Cash for Interest on Sprinkling Certificates	3	72
Cash deposited with City Treasurer	\$184,784	73
Cash refunded for Water Rates paid twice	156	50
Cash refunded for Sand Tickets	\$10	00
Cash refunded for Building Permits	5	70
Cash refunded for Ferrules	2	00
Cash refunded for Penalties	1	15
	18	85
Balance Cash on hand Dec. 31, 1883	184,960	08
	\$811	32

Exhibit of Water Rates for the years 1882 and 1883.

WATER RATES FOR THE YEAR ENDING	Dec. 31, 1882.	Dec. 31, 1883.
Regular and Special Water Rates.....	\$172,648 44	\$182,284 87
Street Sprinkling and Miscellaneous Water Rates.....	9,765 64	10,276 03
Water for Fire Hydrants.....	15,880 00	16,120 00
	\$198,294 08	\$208,680 90
Increase for 1883.....		10,386 82

Exhibit of Total Water Rates and yearly Increase of same.

YEAR.	ANNUAL AMOUNT OF WATER RATES.	INCREASE.
1874.....	\$27,155 90	.....
1875.....	54,720 59	\$27,564 60
1876.....	77,050 56	22,329 66
1877.....	91,277 58	14,227 03
1878.....	103,074 13	11,796 55
1879 (including fire hydrants, \$13,460 00).....	135,015 21	21,194 08
1880 (including fire hydrants, 14,320 00).....	152,223 26	17,218 05
1881 (including fire hydrants, 14,920 00).....	175,526 20	23,292 94
1882 (including fire hydrants, 15,880 00).....	198,294 08	22,767 88
1883 (including fire hydrants, 16,120 00).....	208,680 90	10,386 82

It will be noticed that in the above exhibits the increase for the year 1883 is a little less than one-half that of 1882.

This decrease is owing to the fact that during the year 1883 all livery stables, hotels, halls and manufacturing establishments using large quantities of water have been metered and are to be rated according to meter rates from May 1st, 1883. As a large proportion of the above named places were not metered till late in the year, it was impossible to obtain a reliable average of the quantity of water used early enough to include the revenue from the same in this report.

B. F. COOKE,

Collector of Winter Rates.

ANNUAL REPORT

OF THE

BOARD OF PUBLIC WORKS

FOR THE YEAR

1884.

BOARD OF PUBLIC WORKS.

COMMISSIONERS.

G. H. BENZENBERG,
C. P. FOOTE,
W. P. O'CONNOR,
J. I. FROWNFELTER.

ORGANIZATION.

G. H. BENZENBERG,	-	-	PRESIDENT, <i>Ex Officio</i> .
W. P. O'CONNOR,	-	-	SECRETARY.

DANIEL REGAN,	-	-	-	CHIEF CLERK.
CHAS. S. BRAND,	-	-	-	ASSISTANT CLERK.
HENRY A. PHILLIPS,	-	-	-	MESSENGER.

ENGINEERS' DEPARTMENT.

G. H. BENZENBERG,	-	-	-	CITY ENGINEER.
ARTHUR H. SCOTT,	-	-	-	ASST. ENGINEER.
NICOLAUS ENGEL,	-	-	ASST. ENGINEER, West Division.	
FRED. SCHNEIDER,	-	-	"	South Division.
CHAS. J. POETSCH,	-	-	"	East Division
WILLIAM SCHMIDT,	-	-	-	DRAUGHTSMAN.
HENRY W. WHITE,	-	-	-	CLERK.

REPORT.

OFFICE BOARD OF PUBLIC WORKS, }
MILWAUKEE, January, 1885. }

To the Honorable the Mayor and Common Council of the City of Milwaukee:

GENTLEMEN:—The Commissioners of Public Works present herewith their annual report of their official doings during the year 1884, together with the report of the City Engineer for the same period.

We are pleased to say that all urgently necessary street and alley improvements were accomplished and an unusually large amount of sewers and water pipe was laid.

WATER WORKS.

The report of the City Engineer hereto attached, supplemented by the reports of the Collector of Water Rates, Chief Engineer of the North Point Pumping Works, Chief Engineer of High Service Pumping Station and Book-keeper of the Engineers' Department, is exhaustive in all details pertaining to this branch of the service and nothing can be added thereto.

We note with pleasure the fact that the water department is steadily approaching towards being self-sustaining, last year having, in addition to paying for maintenance, paid the entire interest on its bonds and \$10,000.00 towards the annual sinking fund for the redemption of said bonds.

The North Point Pumping station is now about complete. During the past year large additions were made to the yard room by grading the grounds, new dockage added, new boiler house and coal shed built, and the station may now be considered complete in all details.

The High Service (West Side) Pumping Station was also improved by the addition of a new pumping engine and by necessary changes in the building, and will now meet all wants of that section for some years to come. The reservoir was thoroughly cleaned and repaired and the department is now in very good condition.

A full discription of these improvements, together with the costs thereof, is contained in the City Engineer's Report to which we invite your careful perusal.

For statistics as to the working of the engines and pumping machinery of the department, we refer to the reports of Thos. McMillan and G. R. Merke herewith presented.

SEWERS.

The additional sewers constructed during the past year amounted to $7\frac{475}{1000}$ miles which, added to those built in former years, makes a total of $118\frac{230}{1000}$ miles of sewers in use. The total cost of all sewers constructed to date amounts to \$1,386,611.06. One hundred and five catch-basins were constructed during the past year, making a total of 2,337 in use.

The sewers built during the year are classed as follows, viz: 10,208 lineal feet of brick sewers, and 29,265 lineal feet of pipe sewers, which are divided between the different districts, as follows:

SEWERAGE DISTRICT.	BRICK—Feet.	PIPE—Feet.
East Sewerage District	1,516	5,040
West Sewerage District.....	5,390	16,980
South Sewerage District	3,302	7,245
Total.....	10,208	29,265

BOARD OF PUBLIC WORKS.

7

EAST SEWERAGE DISTRICT.

Cost of sewers paid out of sewerage fund.....	\$6,368 10
Cost of sewers paid by special assessment	6,628 71
Cost of inspection of sewers	523 50
Cost of 17 new catch-basins.....	765 00
Cost of cleaning and repairing sewers and catch-basins and other materials not included in contract.....	5,522 82
Total.....	\$19,808 13

WEST SEWERAGE DISTRICT.

Cost of sewers paid out of sewerage fund.....	\$28,871 02
Cost of sewers paid by special assessment.....	24,543 69
Cost of inspection of sewers	1,879 50
Cost of 51 new catch-basins	2,295 00
Cost of cleaning and repairing sewers and catch-basins and other materials not included in contract	6,445 77
Total.....	\$64,034 98

SOUTH SEWERAGE DISTRICT.

Cost of sewers paid out of sewerage fund.....	\$17,123 30
Cost of sewers paid by special assessment	11,535 31
Cost of inspection of sewers	773 50
Cost of 37 new catch-basins.....	1,665 00
Cost of cleaning and repairing sewers and catch-basins and all other materials not included in contracts.....	3,497 48
Total.....	\$34,594 59

RECAPITULATION.

East Sewerage District.	\$19,808 13
West Sewerage District.....	64,034 98
South Sewerage District.....	34,594 59
Total.....	\$108,437 70

The following shows the total amount of sewerage certificates issued by the Board of Public Works since 1869:

1869.....	\$11,587 58
1870.....	19,512 34
1871.....	5,694 02
1872.....	24,832 23

1873.....	18,769 62
1874.....	92,141 02
1875.....	59,681 07
1876.....	64,067 10
1877.....	67,451 44
1878.....	44,285 58
1879.....	40,750 01
1880.....	29,171 56
1881.....	7,005 17
1882.....	37,486 20
1883.....	24,425 57
1884.....	41,234 87
Total.....	\$588,095 38

MENOMONEE SPECIAL SEWERAGE WORKS.

Considerable work was done and contracted for during the year past, and our intention is to push the work during the coming year as fast as possible, and to the full extent that available funds will permit. The City Engineer gives a full account of the nature, extent and cost of the work done and we respectfully refer you to his report.

STREETS, ALLEYS AND SIDEWALKS.

A full description of all work done on the various streets and alleys is given in the several reports of the Assistant Engineers.

The length of streets newly paved during the year 1884 was.....	1.559 miles.
Length of streets paved previously.....	25.679 "
Total.....	27.238 miles.
Length of streets graded and graveled during 1884.....	5.739 miles.
Length of streets previously graded and graveled	131.281 "
Total.....	137.020 miles.

About 11 45-100 miles of sidewalks was built during the past year, and about one mile was repaired at the expense of the property.

The length of streets repaired with wood amounted to about 2 miles and the amount of repaving with stone blocks amounted to about 3.5 mile.

The total length of streets and alleys improved during the year, divided among the different districts of the city is as follows:

East District.....	3.473 miles.
West District.....	6.756 "
South District	5.361 "
Total	15.590 miles.

STREET CLEANING.

This work was done entirely by men and teams employed by the day and cost \$32,713.09

The removal of ashes which was also performed by men and teams, cost about \$9,266.81.

STREET SPRINKLING.

The sprinkling of the various streets in the city was done by men and teams employed for the purpose, at a total cost of \$29,691.80, of which amount the sum of \$24,565.72 was assessed against the property abutting the streets sprinkled.

STATEMENT

Showing cost of Street Work, etc., in the several Wards for the year 1884, ending December 31st.

WARDS.	NAME OF FOREMAN.	Labor and use of teams cleaning streets.	Cost of gravel, sand and stone chips used for re- pairs of streets.	Labor and use of teams repairing streets.	Sundry supplies, such as earth, hardware and re- pairs of tools, drinking lamps.	Lumber used for making crosswalks and general ward work.	Maintaining public squares	Cost of repairing defective sidewalks, etc., col- lected by special tax.	Cost of cleaning snow from sidewalks, collected by special taxes.	Cost of removing ashes.	Cost of cedar and stone paving blocks used for repairing.	Flag stones used for cross walks.
First	James McHugh	\$2,873 97	\$4,951 61	\$3,453 25	\$157 90	\$868 31	\$122 96	\$85 55	\$247 55	\$1,345 25	.....	.....
Second	Casper Borgelt	2,671 02	1,312 17	2,855 43	200 11	850 13	1 25	557 18	68 15	1,253 03	\$5,180 71	\$248 00
Third	Tim O'Brien	3,625 78	2,512 90	4,524 09	188 29	542 66	.....	178 53	24 50	1,040 97	16,544 94	.....
Fourth	Peter Cannon	4,726 80	1,672 50	2,670 48	143 54	1,978 96	1,061 07	609 11	215 48	986 66	1,559 02	.....
Fifth	Henry Bauer	2,487 90	1,858 23	6,809 53	154 51	277 66	.....	92 89	11 60	292 50	13,935 73	.....
Sixth	Vai. Mueller	2,885 12	1,935 35	1,295 75	82 02	397 91	.....	19 15	.....	462 12	987 00	.....
Seventh	L. T. Stohand	2,478 90	593 37	3,804 25	235 44	980 98	1,229 33	.....	13 00	2,618 32	3,053 30	228 58
Eighth	Fred Westphal	2,369 65	167 47	2,286 30	103 02	504 28	202 11	203 56	27 90	389 04	.....	391 36
Ninth	Phillip Daas	2,512 83	258 14	458 95	54 15	117 92	.....	46 53	148 49	2 3 00	.....	.....
Tenth	John Dobbertin	2,840 71	1,257 51	1,847 50	117 56	293 53	.....	40 99	.....	322 35	.....	.....
Eleventh	J. Studerus	1,478 19	1,061 42	812 78	425 44	523 23	.....	16 67	.....	149 72	.....	.....
Twelfth	Levi Haines	982 82	870 51	1,232 37	136 89	386 18	.....	4 75	.....	62 45	1,499 65	.....
Thirteenth	Chas. Klage	1,378 50	24 50	561 00	40 36	128 64	.....	.....	118 80	142 00	.....	.....

SCHOOLS AND PUBLIC BUILDINGS.—ENGINE HOUSE NO. 9.

A new fire engine house was constructed after plans submitted by H. C. Koch & Co., on the north-east corner of Clybourn and Seventeenth Sts., at a total cost including architects' and inspectors' fees and incidentals, of \$10,587.06.

This amount also includes the bill of the contractor, of \$951.39 for extra foundations rendered necessary by the swampy nature of the soil.

FOURTH DISTRICT SCHOOL.

A large, well appointed and complete new school building of 15 class rooms was erected on the site of the old Fourth District School Building, at a total cost of \$51,439.17. We are pleased to say that the building which is now occupied is satisfactory in every respect. The class rooms, teachers' rooms, halls and play rooms are large, well heated and ventilated. The contractors work on the building was completed in a good, workmanlike manner, and although large, the building can be justly regarded as a model school house. The following items show the detailed cost of construction:

Contract of Jacob Herr for building the school house	\$42,350 00
Jacob Herr, extra foundation	99 83
J. P. Rundle, steam heating	6,189 00
H. Mueller, inside blinds	850 00
Cost of inspection	696 00
Cost of architect	989 77
Cost of window guards	76 33
Cost of gas fixtures	77 00
Cost of incidentals	111 24
Total	<u>\$51,439 17</u>

NORMAL SCHOOL BUILDING.

The Common Council having appropriated the funds necessary to complete the Normal School Building according to plans submitted by E. T. Mix & Co., said plans having been accepted by the Board of Regents of the State of Wisconsin, the contracts for the building was let on March 22, 1884, to Chas. Kraatz for the construction of the building and to Geo. S. Lyon for the plumbing, draining and gas fitting.

The building was completed on or about the 15th day of December, 1884, at a total cost of \$34,927.49, exclusive of steam heating. The appropriation having been made in the amount of \$40,000.00, an endeavor will be made at once to secure heating apparatus for the amount unexpended. The amount expended in the construction of this building is in detail as follows:

Chas. Kraatz, contract for building the school house.....	\$32,235 00
Chas. Kraatz, extra foundation.....	69 95
Geo. S. Lyon, plumbing, gasfitting, etc.....	1,061 00
Cost of window guards.....	47 62
Cost of inspection.....	848 00
Cost of architect services.....	665 92
Total.....	<u>\$34,927 49</u>

FIFTH DISTRICT SCHOOL.

This building was entirely completed and occupied during the first part of the year. The heating apparatus placed therein, by Jas. L. Judge, having failed to properly heat the building, it was taken out and replaced by other boilers at the expense of said Judge. The entire cost of the building, including heating and furniture was \$64,277.97.

NINTH DISTRICT SCHOOL.

An additional stairway was constructed on this building so as to provide more perfect means of escape in case of fire and also to give more room, at a cost of \$2,841.00.

TENTH DISTRICT BRANCH SCHOOL.

An addition was made to this school building of four new class rooms.

FIRST AND TWELFTH DISTRICT SCHOOLS.

Steam heating apparatus was placed in these buildings to replace the stoves, at a cost of \$4,800.00 for the First District School and of \$4,790.00 for the Twelfth District School.

SECOND DISTRICT BRANCH SCHOOL.

Contracts were let during the year for the construction of this building, to be located on the corner of Twentieth St. and Cold Spring Ave. The building contains 8 large class rooms and is so built as to admit of being enlarged to 16 class rooms. The contracts let were as follows, to Chas. Kraatz, the main contractor at \$18,393.00, to Sloteman & Kruse for drains and plumbing at \$549.00. To H. Mooers for steam heating at \$3,000.00. The building when completed, including architects' and inspectors' fees will have cost about \$23,000.00.

NEW CENTRAL POLICE STATION.

Contracts were entered into for constructing this much needed building on July 5th 1884. Messrs. Thompson & Brockman secured the contract for the construction of the building, for the sum of \$28,833.00. The steam heating contract was awarded to J. P. Rundle for \$2,765.00 and the drain laying and plumbing was awarded to Geo. A Spence for \$959.00. The whole cost of the building when completed, including architects' and inspectors' fees and all contingencies will be about \$34,000.00.

REPAIRS OF SCHOOL BUILDINGS.

Repairs where and when needed as required, were made on the buildings built in former years, at a cost of \$19,340.20.

BRIDGES.

Two new iron bridges were constructed during the year, to replace worn out wooden ones, at the following points, viz:

Across the Milwaukee River at the foot of Oneida St., at a total cost of \$40,546.00 including foundations and abutments.

Across the Menomonee River at the foot of Sixth St., at a total cost of \$44,854.00 including foundations, abutments and approach thereto.

The Chicago, Milwaukee & St. Paul Railway Co. completed an iron viaduct over its tracks on Sixth St. and the city did the work of planking the same at a cost of \$4,666.16, divided as follows:

For lumber.....	\$3,092 49
For nails, paint, cartage, etc.....	166 94
For labor.....	1,406 73
	<hr/>
	\$4,666 16

The bridges in use at present are as follows:

FIVE STATIONARY BRIDGES OF IRON.

1. North avenue, completed in	1874
2. Humboldt avenue, completed in.....	1876
3. Cherry street, completed in.....	1877
4. First ave viaduct, completed in.....	1878
5. Racine street, completed in	1883

FOUR STATIONARY BRIDGES OF WOOD.

1. Dock street (across canal), completed in	1866
2. Dock street (across water power), completed in.....	1870
3. Canal street (across Holton's canal), completed in	1873
4. Canal street (across Menomonee river), completed in.....	1871

FOUR SWING BRIDGES OF WOOD.

1. Pleasant street, completed in	1870
2. Sixth avenue, completed in	1873
3. Kinnickinnic avenue, completed in	1869
4. Lincoln avenue, completed in	1882

FIFTEEN SWING BRIDGES OF IRON.

1. Point street, completed in.....	1871
2. Chestnut street, completed in	1872
3. State street, completed in	1871
4. Huron street, completed in	1868
5. Buffalo street, completed in.....	1875
6. Broadway, completed in.....	1872
7. Muskego road, completed in.....	1873
8. First avenue, completed in.....	1872
9. Menomonee, completed in	1880
10. East Water, completed in.....	1881
11. Becher street, completed in.....	1881
12. Grand avenue, completed in	1882

13. Cherry street, completed in	1883
14. Oneida street, completed in.....	1884
15. Sixth Street, completed in.....	1884

The amounts expended for repairs of bridges are divided as follows:

Lumber and piles.....	\$5,724 71
Other supplies	3,024 47
Labor used in repairing	8,668 67
	<u>\$17,417 85</u>

DREDGING AND DOCKING.

The amount set aside by the Common Council, for doing this work during the past year was \$15,000.00.

Contracts were awarded to C. H. Starke at 15c. per cubic yard for the Milwaukee river and at 16c. per cubic yard for the Kinnickinnic river.

Messrs. Truman & Cooper did the work in the Menomonee river at 12c. per cubic yard.

The total amount of earth removed was as follows:

Milwaukee river.....	36,053	cubic yds.
Menomonee river.....	61,084	" "
Kinnickinnic river.....	8,421	" "
Making a total of.....	105,558	" "
Which cost.....	\$14,085 39	

The amount of dredging performed, it will be observed by comparing with the work done last year, was 61,061 cubic yards more than the previous year and cost but \$2,000.00 more.

The dockage of the city crossings was repaired at a cost of \$209.49.

The following is a statement of the expenditures, and the condition of the fund:

Balance unexpended from 1883.....	\$2,264 28
Appropriation 1884	15,000 00
	<u>\$17,264 28</u>
Paid for dredging.....	\$14,085 39
Paid for docking.....	209 49
Paid for ice breaking.....	230 00
Paid for inspection and sundries.....	632 98
	<u>15,157 86</u>
Balance.....	<u>\$2,106 42</u>

PARKS.

The property required for the extention of the Seventh Ward Lake Shore Park from its present terminus south to Wisconsin St., has been purchased by the city and plans adopted for its improvement.

No work has as yet been done on the park.

The Grand Avenue park was improved by sodding the same and making walks thereon, at a cost of about \$400.00.

No other work on the parks of any importance was done.

IN GENERAL.

For details, statistics and all other information, we respectfully refer to the reports of the heads of the several sub-departments.

Respectfully submitted,

C. P. FOOTE,

W. P. O'CONNOR,

J. I. FROWNFELTER,

Commissioners of Public Works.

SCHEDULE OF CONTRACTS, ETC.

BOARD OF PUBLIC WORKS.

1884.

SPECIAL ASSESSMENTS.

The amounts of special assessments for various purposes for which certificates of the board of Public Works have been issued according to law during the year 1884, are stated in the following schedules:

RECAPITULATION

Of tax certificates issued by the Board of Public Works for street and alley improvements in the year 1884:

WARD.	Number of Certificates.	Amount.
First.....	464	\$13,144 10
Second.....	288	9,128 31
Third.....	16	1,694 25
Fourth.....	371	8,723 84
Fifth.....	14	566 65
Sixth.....	125	5,535 52
Seventh.....	9	386 75
Eighth.....	755	19,690 41
Ninth.....	285	8,640 55
Tenth.....	832	12,395 44
Eleventh.....	441	9,886 66
Twelfth.....	87	3,624 30
Thirteenth.....	266	10,482 56
Total.....	3953	\$103,899 34

RECAPITULATION

Of special taxes assessed by the Board of Public Works for sprinkling the roadway of streets during the year 1884.

WARD.	Amount.
First.....	\$2,398 12
Second.....	3,444 05
Third.....	2,036 49
Fourth.....	4,731 49
Fifth.....	1,707 61
Sixth.....	2,147 57
Seventh.....	2,603 75
Eighth.....	1,098 47
Ninth.....	1,469 07
Tenth.....	1,516 06
Eleventh.....	869 23
Twelfth.....	495 81
Thirteenth.....	48 00
Total.....	\$24,565 72

RECAPITULATION

Of sewerage certificates issued for the construction of main sewers during the year 1884.

DISTRICT.	Number of Certificates.	Amount.
East Sewerage.....	241	\$6,553 91
West Sewerage.....	854	23,430 75
South Sewerage.....	328	11,250 21
Total.....		\$41,234 87

RECAPITULATION

Of special tax levied for various miscellaneous purposes during the year 1884.

FOR WHAT PURPOSE.	Amount.
Cleaning sidewalks from earth and snow.....	\$875 47
Repairing defective sidewalks.....	1,943 00
House drains and Water connections.....	3,264 94
Total	\$6,083 47

RECAPITULATION

Of special assessments against property made for the laying of water pipe for the year 1884.

WARD.	Amount.
First.....	\$4,830 96
Second.....	5,419 50
Third.....	182 30
Fourth.....	1,333 24
Fifth.....	705 97
Sixth.....	2,500 61
Seventh.....	
Eighth.....	3,854 21
Ninth.....	1,400 06
Tenth.....	1,521 68
Eleventh.....	5,742 18
Twelfth.....	986 26
Thirteenth.....	8,731 88
Total	\$37,208 91

GRAND RECAPITULATION

Of tax certificates of special assessments and water pipe assessments made by the Board of Public Works during the year 1884.

	Amount.
Certificates for street and alley improvement.....	\$103,899 34
Sewerage Certificates.....	41,234 87
Special taxes for miscellaneous purposes.....	6,083 47
Special tax for sprinkling.....	24,565 72
Special assessments for water pipe.....	37,208 91
Total.....	\$212,992 31

COMPARATIVE STATEMENT, 1883--1884.

	Amount.
Total special assessments and certificates of Board of Public Works (not including water pipe) in 1883.....	\$106,893 71
Total special assessments and certificates of Board of Public Works (not including water pipe) in 1884.....	175,783 40
Increase.....	\$68,889 69

The following list shows the total amount of assessments made in each year by the Board of Public Works since it was created, water pipe excepted:

For the year 1869.....	\$88,459 28
1870.....	80,807 25
1871.....	38,391 76
1872.....	64,557 47
1873.....	78,092 13
1874.....	187,622 51
1875.....	159,851 87
1876.....	213,558 71
1877.....	227,548 73
1878.....	201,759 06
1879.....	112,096 17
1880.....	183,327 00
1881.....	38,299 45
1882.....	153,946 87
1883.....	106,893 71
1884.....	175,783 40
Total.....	\$2,110,995 37

The following list shows the total amount of taxes levied against property for laying water pipe since 1871 in which year the first assessment for said work were made.

For the year 1872.....	\$83,310 65
1873	232,370 04
1874.....	13,989 33
1875.....	38,935 04
1876.....	37,560 00
1877.....	31,338 03
1878.....	33,390 66
1879.....	14,569 54
1880.....	26,501 46
1881.....	7,826 67
1882.....	29,831 79
1883.....	9,843 03
1884.....	37,208 91
Total.....	\$596,645 15

RECAPITULATION

Of cash received by the Board of Public Works for permits given to connect private drains with the main sewers, and paid to the City Treasurer, as follows:

1884.	East Sewerage District.	West Sewerage District.	South Sewerage District.	Total.
January.....		\$6 00		\$6 00
February.....	\$6 00	25 00	\$24 00	55 00
March.....	9 00	24 00	12 00	45 00
April.....	57 00	121 00	66 00	244 00
May.....	52 00	253 00	96 00	401 00
June.....	73 00	123 00	35 00	231 00
July.....	59 00	203 00	57 00	319 00
August.....	33 00	149 00	66 00	248 00
September.....	46 00	183 00	134 00	363 00
October.....	48 00	152 00	75 00	275 00
November.....	21 00	93 00	60 00	174 00
December.....	6 00	12 00	3 00	21 00
Total.....	\$410 00	\$1,344 00	\$628 00	\$2,382 00

The total cash receipts for sewerage permits during the year 1883 was \$2,527.00. On comparison with this year's receipts from the same source, a decrease is shown of \$145.00.

RECAPITULATION

Of cash received by the Board of Public Works for surveying private property
in the several Wards of the City of Milwaukee, during the year 1884.

	Amount.
First Ward.....	\$4 00
Third Ward.....	4 00
Seventh Ward.....	4 00
Eighth Ward.....	4 00
Twelfth Ward.....	4 00
Total.....	\$20 00

WARD PROPERTY.

The Foremen of the Wards report the following, as the property of the Wards respectively now in their possession:

WARDS.	Wrenches.	Squares.	Augers.	Screwdrivers.	Tape Lines.	Ice Bars.	Grind stones.	Straight-edges.	Truck Wagons.	Sprinkling Tubs,	Oil or Naptha Lamps.	Stone chips—yards.	Lumber—Feet.	Cedar Posts—yards.	Picks.	Hatchets.	Hammers.
First.....	1		1			2			4	4		15	1000				
Second.....	1				1				4	4							
Third.....									4	4							
Fourth.....									6	3	39		500	300			
Fifth.....	1	1	1	1	1	2	1		3	3	32		500	10			
Sixth.....									3	4			3000				
Seventh.....	1								3	4			1000				
Eighth.....						2	5		3	5		6	1000				
Ninth.....					1		1		3	3			150				
Tenth.....	1	1			1				3	3			600				
Eleventh.....										2	8		180				
Twelfth.....	1	1							1	2			3028				
Thirteenth.....						1				1	6	1					
													128				

WARD PROPERTY—CONTINUED.

WARDS.	Adzes, Hand-ax, etc.	Grub Hoes.	Saws and Files.	Rakes.	Crow Bars.	Wheel Barrows.	Lanterns.	Scythes.	Tampers.	Pounders.	Street Scrapers.	Brooms.	Pitch Forks.	Spirit-levels.	Tar and Oil Cans.	Shovels, Spades, and Snow-shovels.	Hoes.
First.....	1	1	1	1	2	2	.....	3	1	1	.....	.....	.....	.....	.....	.....	8
Second.....	2	.....	3	1	2	2	.....	.....	12	.....	1	4	1	.....	.....	16	13
Third.....	.....	1	1	2	3	1	.....	.....	5	.....	.....	2	.....	.....	.....	8	10
Fourth.....	3	.....	.....	2	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	12	.....
Fifth.....	1	3	4	1	1	3	4	1	2	2	1	.....	2	.....	.....	.....	.....
Sixth.....	.....	.....	.....	1	.....	2	.....	.....	.....	3	.....	.....	2	.....	.....	.....	.....
Seventh.....	.....	.....	3	1	3	1	.....	1	2	1	2	4	.....	.....	.....	16	14
Eighth.....	.....	.....	.....	6	3	1	.....	1	3	1	.....	.....	.....	.....	.....	9	17
Ninth.....	4	4	2	1	1	1	2	.....	3	.....	.....	.....	.....	.....	.....	12	6
Tenth.....	.....	.....	.....	.....	1	1	.....	1	1	.....	.....	.....	1	.....	.....	4	4
Eleventh.....	.....	.....	1	.....	2	2	1	1	1	.....	.....	.....	.....	.....	.....	10	13
Twelfth.....	.....	1	2	1	1	.....	.....	1	3	.....	.....	.....	.....	.....	.....	6	10
Thirteenth.....	1	1	1	1	1	1	1	2	.....	1	.....	.....	.....	.....	.....	6	6

GENERAL CITY PROPERTY.

The superintendent of Sewers, School Repairs and Bridges, report the following property in their possession:

SEWERS—WEST AND EAST SEWERAGE DISTRICT.

Tool Chest.....	1
Sewer Cleaning Machine.....	1
Feet of new Wire Rope.....	1,000
Feet of old Wire Rope.....	150
Pails.....	4
Hand Ropes.....	2
Hose Protectors.....	2
Picks.....	8
Lanterns.....	5
Ladder.....	1
Pairs of Rubber Boots.....	4
Hydrant Wrench.....	1
Feet of Iron Chain.....	150
Oil Can.....	1
Force Pump.....	1
Spirit Level.....	1
Feet of Hose.....	400
Cement Box.....	1
Scoops.....	2
Feet of Lumber.....	500
Manhole Covers.....	2
Catch Basin Covers.....	40

SOUTH SEWERAGE DISTRICT.

Derricks.....	2
Ropes.....	2
Feet of Hose.....	400

Bridges.....	2
Picks.....	4
Pails.....	4
Crowbars.....	2
Lamps.....	2
Centers.....	2
Gas Pipe Rods.....	20

SCHOOL REPAIRS.

Swinging Scaffold, complete.....	1
Sledge Hammer.....	1
Fence Post Augers.....	2
Spades.....	3
Shovels.....	3
Picks.....	3
Scythe.....	1
Rake.....	1
Ladder, 30 feet long.....	1
Step Ladder.....	1
Paint Mill.....	1
Scale.....	1
Tinsmith's Shears.....	1
Scissors, pair.....	1
Black Board Brushes.....	4
Paint Brushes.....	12
Sickles.....	1

BRIDGE REPAIRS.

Clamp Screws.....	5
Clamp Chains.....	3
Sledges.....	2
Crowbars.....	6
Cant Hooks.....	4
Hardy Chisels.....	5
Spike Sets.....	1
Shovels.....	2
Cross-cut Saws.....	3
Timber Dollies.....	4
Ship Augers.....	19
Wrenches.....	21
Gas Tongs.....	7
Jack Screws.....	23
Jack Bars.....	12
Blocks and Falls, 8-inch.....	2
Blocks and Falls, 6-inch.....	2
Large Scows.....	2
Small Scows.....	2

Oars.....	2
Pike Poles.....	8
Pitch Kettle.....	1
Grappel.....	1
Iron Wedges.....	10
Wheel Wrench.....	1
Pair Purchase Block.....	1
Grindstones.....	2
Ferry Chains.....	2
Red Lamps.....	5
Large Bright Lamps.....	6
Iron Sheave Blocks.....	2
Shackles.....	6
Sulphur Kettle.....	1
Ladle.....	1
Stone and Iron Drills.....	16
Swivel Screws.....	1
House Screws.....	8
Wooden Rollers.....	14
Cape Chisels.....	5
Stone Chisels.....	4
Ice Tongs.....	2
Scow Lines.....	4
Feet Oak Plank.....	10,000
Shackle Bars.....	2
Kegs of Spike.....	13

The following property is in use at the various bridges, viz:

Life Preservers and Grappiing Irons.....	19
Scrapers.....	31
Wheelbarrows.....	18
Lanterns.....	31
Axes.....	17
Hand Axes.....	17
Shovels.....	19
Snow Shovels.....	32
Scoops.....	16
Brooms.....	30
Crowbars.....	27
Oil Cans.....	33
Wrenches.....	18
Picks.....	11
Ice Forks.....	7

MISCELLANEOUS CONTRACTS—1884.

Jan.	15.	Oscar Knie, constructing new Fire Engine House on Seventeenth St., Fifth Ward.....	\$9,115 00
	31.	C. H. Starke, constructing a section of the Menomonee Special Sewerage Works across Milwaukee River to block 176, Fifth Ward.....	35,000 00
Feb.	5.	Jacob Herr, constructing the Fourth District School building on the corner of Eight and Sycamore Street, Fourth Ward.....	42,350 00
	19.	Patrick Drew, for grading the grounds of the North Point Pumping Works for the sum (32 6-10) cents per cubic yard	
	20.	Dennis Long & Co., 900 tons of cast iron water pipe :	
		260 tons of 12 inch pipe.....@ \$33 38 per ton.	
		180 tons of 8 inch pipe.....34 10 "	
		300 tons of 6 inch pipe.....34 05 "	
		5 tons of 4 inch pipe.....34 63 "	
		3 tons of 3 inch pipe.....36 50 "	
		152 tons of 6 and 8 inch pipe.....34 10 "	
			34 05 "
March	1.	C. H. Starke, constructing the substructure of a Bridge across North Menomonee Canal, connecting Sixth Street and First Avenue.....	27,750 00
	10.	Detroit Bridge and Iron Works, constructing superstructure of an Iron Swing Bridge, across the North Avenue Canal, connecting Sixth Street and First Avenue.	16,000 00
	10.	Northwestern Globe Gas Light Co., lighting and maintaining Naptha Lamps in the First, Fourth, Sixth and Thirteenth Wards, \$27.00 per lamp per year	
	22.	Charles Kraatz, constructing Normal School building, Lots, 7, 8, 9, 10 and 11, Block 22, Wells Addition, Fourth Ward.....	32,235 00
		Geo. S. Lyon, Gasfitting and Plumbing in the Normal School building.	1,061 00
April	5.	D. W. Purtell, laying 12 inch water main pipe, @ 41½c. per lineal foot.	
		Jacob Werner, laying 8 inch water main pipe, @ 33c. per lineal foot....	
		Frank McGary, laying 12 inch water main pipe, @ 44½c. per lineal foot.	
	8.	Val. Kuhlmann, laying 6 inch water main, pipe @ 25½c. per lineal foot.	
	11.	Filer & Stowell Co, for 60 Fire Hydrants, @ \$40.00 per hydrant.....	
May	2.	E. P. Allis, 3,000,000 gallon Pumping Engine at West Side Pumping Station	9,750 00
	3.	C. S. Brown, constructing 200 feet of docking at the North Point Pumping Works, @ \$11.00 per lineal foot.....	

May	8.	H. Truman & Geo. Cooper, dredging Menomonee River, @ 12c. per cubic yard.....	
	10.	Thomes Phillips, Patent Exhaust Fan for Municipal Court.....	\$340 00
	15.	C. H. Starke, dredging Milwaukee River, per cubic yard 15 cents....	
		H. J. Steinman, common lumber.....	10 72
		John Schroeder, common flooring	20 00
		Chas. B. Crombie, 3 inch white plank, per one thousand feet.....	22 45
	21.	Joseph Conrad, constructing a stairway addition at the Ninth District School building	2,841 00
	31.	C. H. Starke, dredging Kinnickinnic River, per cubic yard 16 cents....	
June	3.	C. H. Starke, stone filling for dock at North Point Pumping Works, per cord \$8.50.....	
	28.	G. F. Stuewe, constructing the foundation for the new Pumping Engine at the West Side Pumping Works.....	2,600 00
July	3.	Pennsylvania Coal Company, 4,400 tons of Coal for the Water Department, @ \$6.38 per ton.	
	5.	J. B. Thompson & S. J. Brockman, constructing new Police Station on Lot 7, Block 63, Seventh Ward.....	28,833 00
		Geo. A. Spence, Gasfitting and Plumbing in the new Police Station....	959 00
	9.	Hagen Mooers, Steam Heating apparatus in the First District School building	4,800 00
	11.	Chas. Kraatz, constructing a School Building on a part of Lots 4, 5, 6, 7, 8 and 9, in Block 1, Lynde's Addition, Second Ward.....	18,393 00
	11.	Sloteman & Kruse, gas fitting and plumbing in the Second District School building	549 00
	12.	M. Coogan, steam heating apparatus in the Twelfth District School building	4,790 00
	20.	The Bell Waterphone Co., for rent of waterphone per year.....	250 00
Aug.	6.	R. D. Wood & Co., for 104 fire hydrants @ \$45 per hydrants	
	8.	Edward P. Allis, Reynold's patent compound condensing pumping engine for the Menomonee Special Sewerage Works.....	29,500 00
	16.	Jos. P. Rundle, steam heating apparatus in the Fourth District School building	6,189 00
	21.	H. P. Mueller, inside blinds for the Fourth District School building ..	986 00
	23.	John Kraatz, constructing boiler house, coal shed and chimney at the North Point Pumping Station.....	17,960 00
	23.	T. S. White, iron roof trusses for the boiler house and engine house at North Point Pumping Works	3,485 00
Sept.	25.	Clarence S. Brown, driving piles at bridges, @ 27c. per lineal foot....	
Oct.	9.	Hazen Mooers, steam heating apparatus in the Second District Branch School building	3,000 00
Nov.	12.	Oscar Knie, mason work for the engine bed, pump and gate well conduit and weir for the Menomonee Special Sewerage Works.....	9,800 00
Dec.	2.	Wm. Forristal, constructing the easterly portion of Section No. 4 of the Menomonee Special Sewerage Works, @ \$9.25 per lineal foot....	
	10.	Sloteman & Kruse, steam heating apparatus in the West Side Pumping Station.....	210 00
	23.	Frank M. Gray, making test borings to the proposed White Fish Bay Conduit, @ \$2.15 per lineal foot of boring.....	

SCHEDULE OF CONTRACTS—FIRST WARD.

DATE.	CONTRACTOR.	STREET.	FROM	TO	Grading, per cubic yard.	Graveling, per cubic yard.	Cutter paving, per square yard.	Planking, per lineal foot.	Alley Paving, per square yard.	Sodding, per square yard.	Stone curbing, per lineal foot.	Wood curbing, per lineal foot.
Me ^h	7 John T. Hoff.	Alley, block B.	Brady	Pleasant	.32				.60			
April	5 O'Connor & Polczynski.	Hamilton	Astor	North Water				.29				
	5 John Mead.	Hamilton	Astor	North Water			.40					
	5 Mantle Marsh.	Hamilton	Astor	North Water	.27							
	8 Mantle Marsh.	Hamilton	Astor	North Water		.87						
May	7 John Donoghue	Lyon	Jefferson	Cass	.27	.87				.09½		
	7 C. F. Wentz.	Lyon	Jefferson	Cass				.29			.55	
	7 James O'Connor.	Lyon	Jefferson	Cass	.27	.87						
June	7 John Donohue.	Cros'gs on Lyon	Jefferson	Cass	.12							
	28 Fred. Gottschalk.	Prospect Avenue	North Avenue.	Maryland								
	28 Wm. Casper.	Prospect Avenue	North Avenue.	Maryland	.80		.48	.26½				
	28 James O'Connor	Prospect Avenue	North Avenue.	Maryland								
	28 J. F. Beers.	Maryland	Prospect Avenue	Greenwich	.12							
	28 William Casper.	Maryland	Prospect Avenue	Greenwich		.80	.48					
	28 James O'Connor	Maryland.	Prospect Avenue	Greenwich				.26½				
July	25 John Donoghue	Warren Avenue.	North Water	W. line of subdiv. of s.-w. quarter of n.-e. quarter, sec. 21	.80							
				W. line of subdiv. of s.-w. quarter of n.-e. quarter, sec. 21			.46					
25	John Mead	Warren Avenue	North Water	W. line of subdiv. of s.-w. quarter of n.-e. quarter, sec. 21	22							
25	James O'Connor.	Warren Avenue.	North Water	W. line of subdiv. of s.-w. quarter of n.-e. quarter, sec. 21				.27				
Sept.	8 John Wilce.	Knapp	Astor	n.-e. quarter, sec. 21							.65	
8	Edwin Hyde	Farwell Avenue.	Franklin	Marshall							.70	

SCHEDULE OF CONTRACTS—FIRST WARD—CONTINUED.

DATE.	CONTRACTOR.	STREET.	FROM	TO	Grading, per cubic yard.	Graveling, per cubic yard.	Gutter Paving, per square yard.	Planking, per lineal foot.	Alley Paving, per square yard.	Sodding, per square yard.	Stone curbing, per lineal foot.	Wood curbing, per lineal foot.
Sept. 19	Henry Vogt.....	Alley, block 195.	Kewanee.....	Brady.....	.23				.50			
Oct. 21	John T. Hoff.....	Van Buren.....	Knapp.....	Brady.....	.24					.07%		
21	Michael Donoghue.....	Van Buren.....	Knapp.....	Brady.....							.67	
21	Edwin Hyde.....	Van Buren.....	Knapp.....	Brady.....				.28				
21	Jas. O'Connor.....	Van Buren.....	Knapp.....	Brady.....								
21	John Mead.....	Alley, quar. blk. 53, 54, 55, 56.	Pleasant.....	Kewanee.....					.60			
21	F. J. Johnson.....	Frederick.....	Bradford.....	Bellevue Place.....	.23							.08
21	F. J. Johnson.....	Frederick.....	Bradford.....	Bellevue Place.....		.78%	.47%					
21	F. J. Johnson.....	Bellevue Place.....	Oakland Ave.....	Frederick.....	.23							.08
21	F. J. Johnson.....	Bellevue Place.....	Oakland Ave.....	Frederick.....		.78%	.47%					
21	F. J. Johnson.....	Summit Place.....	Oakland Ave.....	Frederick.....	.23							.08
21	F. J. Johnson.....	Summit Place.....	Oakland Ave.....	Frederick.....		.78%	.47%					

SCHEDULE OF CONTRACTS—SECOND WARD.

[illegible]

SCHEDULE OF CONTRACTS—THIRD WARD.

DATE.	CONTRACTOR.	STREET.	FROM	TO	Cedar block pavem't, per square yard.	Gutter paving, per square yard.	Granite paving blocks, per square yard.	Gravel for street rep'rs per cubic yard.	Laying stone blocks, per square yard.
May	7 James O'Donnell.	Milwaukee	Wisconsin	Michigan.	1.15	1.15	1.91	.....	.....
June	7 James O'Donnell 7 Chicago & Wisconsin Granite and Quarrying Co.	Milwaukee	Wisconsin	Michigan.	.....	1.15	1.91	.....	.....
Sept.	10 J. H. McGovern.	Gravel for str. repairs.	.....	.....	.....	.....	.....	.79	.....
Oct.	24 J. Cannon & M. Cannon 25 Green Lake Granite Co. 7 Henry Vogt.	East Water. Buffalo.	180 ft. south of Detroit. East Water	E. W. St. Bridge. Broadway	.....	.....	1.87½	.....	14⅓
							1.14	.....	.14

SCHECULE OF CONTRACTS—FOURTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM	To	Grading, per cubic yard.	Graveling per cubic yd.	Gutter paving, per square yard.	Planking, per lineal foot.	In the Aggregate.	Granite block pavement, per sq. yard.	Stone curbing, per lineal foot.	Cedar block pavement, per sq. yard.	Alley paving, per square yard.	Sodding per square yard.	Grading sidewalks, per cubic yard.
May 31	Wm. Guttkecht.	First Avenue.	East Street.	160 ft. s. of East st					579.69	2.46					
July 8	Charles Forrestal.	Fowler	Second	Fourth											
July 8	Charles Forrestal.	Fowler	Second	Fourth			2.46								
July 8	James O'Donnell.	Fowler	Second	Fourth				.43							
July 8	Edwin Hyde.	Fowler	Second	Fourth							.68				
July 25	John Wilce.	Fourth	Blocks 83 & 84.	Fowler							.65				
July 25	Pat Drew.	Fourth	Blocks 83 & 84.	Fowler								1.11			
July 25	James Murphy	Alley, Block 5, Palmer & Co. Addition No. 1.	Sycamore	Clybourn									.55		
July 25	James Murphy	Alley, Blocks 67 & 178 E & W Alley, Block 210 Eldred's Addition.	Grand Avenue.	Sycamore									.65		
Sept. 9	John Kohl.	N & S Alley, Block 210 Eldred's Addition.	Wells	N. and S. Alley									.65		
Sept. 10	Martin Cannon.	Grand Avenue	Fifteenth	Twenty-first							.64			.09 3/4	
Sept. 10	John H. Kearney	Grand Avenue	Fifteenth	Twenty-first											
Sept. 10	J. F. Beers.	Grand Avenue	Fifteenth	Twenty-first											
Sept. 10	O'Donnell & Sullivan	Grand Avenue	Fifteenth	Twenty-first								.77			
Sept. 19	J. F. Beers	Twenty-eight	Clybourn	Sycamore	.17 1/2										
Sept. 19	H. Vogt.	Twenty-eight	Clybourn	Sycamore				.25							
Sept. 23	J. F. Beers.	Sixth	Grand Avenue	Clybourn	.33										
Sept. 23	John Wilce.	Sixth	Grand Avenue	Clybourn							.62			.12	
Oct. 18	Richmond Stockdale	Clybourn	Twenty-fifth	Washington Ave.	.12 1/2										
Nov. 5	R. Stockdale.	Twenty-fifth	Sycamore	Clybourn		.78	.38								
Nov. 5	James O'Donnell.	Twenty-fifth	Sycamore	Clybourn	.11 9										
Nov. 5	F. Grokowsky.	Twenty-fifth	Sycamore	Clybourn				.66							

SCHEDULE OF CONTRACTS—FIFTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM	TO	Alley paving, per cubic yard.	Gravel for street repairs, per cubic yd.	Granite paving blocks, per square yard.
Feb. 15	Lorenz Seymer	E. and W. Alley, block 3, Milw. proper and block 82, 5th Ward	Bardlay	Clinton .....	.63	.....	.....
May 6	B. Degentesch	Gravel for street repairs .....	.....	.....	.....	.60	.....
June 5	William G. Taylor .....	.....	.....	.....	.....	.....	1.84½

SCHEDULE OF CONTRACTS—SIXTH WARD.

[illegible]

SCHEDULE OF CONTRACTS—SEVENTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM.	TO.	Macadamizing Road-way, etc., in the aggregate.	Stone curbing, per lineal foot.
August 16.....	Jas. Markey.....	Milwaukee.....	Division.....	Biddle.....	\$5,300 00.....	.....
" 10.....	John T. Hoff.....	Van Buren.....	Division.....	Biddle.....	5,400 00.....	.....
September 8.....	John Wilce.....	Jefferson.....	Oneida.....	Mason.....	.....	.65

SCHEDULE OF CONTRACTS--EIGHTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM	To	Oil Lamps, per lamp per year.	Alley paving, per square yard.	Grading, per cubic yard.	Graveling, per cubic yard.	Gutter paving, per square yard.	Sidewalk plank, per lineal foot.
April 2	P. R. Wolf.	E and W. Alley.	Ninth avenue	Tenth avenue	\$10.00	.67				
May 8	Julius Duemke.	Fifteenth avenue	National avenue	Railroad street.			.16½	.68		
13	John Thiede	Fifteenth avenue	National avenue	Railroad street.					.44	.26
13	A. Weidner	Twenty-first avenue	National avenue	Railroad			.18		.48	
July 17	A. Weidner	Twenty-first avenue	National avenue	Railroad						.23
17	Theo. Egelhoff	Twenty-first avenue	National avenue	Railroad				.72		
17	Lorenz Seymer	Washington	W. line of Walker's Point Addition	Ninth avenue						.26
17	Lorenz Seymer	Washington	W. line of Walker's Point Addition	Ninth avenue			.20	.65	.46	
19	John Dierschow	Nineteenth avenue	Railroad	National avenue						.24
19	Jas. O'Connor.	Nineteenth avenue	Railroad	National avenue					.43¾	
19	Julius Duemke	Nineteenth avenue	Railroad	National avenue			.19			
19	A. Weidner	Nineteenth avenue	Railroad	National avenue				.65		
19	J. H. McGovern	Nineteenth avenue	Railroad	National avenue						
25	Julius Duemke	Alley, Block 13, Walker's Point Addition	Sixth avenue	Seventh avenue		.72				
25	Julius Duemke	E. and W. Alley, Blk 44, Walker's Pt Addition	Fifth avenue	Sixth avenue		.67¾				
Aug. 8	Julius Duemke	Alley, Block 4, Walker's Point Addition	Fourth avenue.	Fifth avenue		.63¾				
8	John Dierschow	Mineral	W. line of Walker's Pt. Addition.	Tenth avenue			.15			
8	Lorenz Seymer	Mineral	W. line of Walker's Pt. Addition.	Tenth avenue				.69		
8	Adolph Weidner.	Mineral	W. line of Walker's Pt. Addition.	Tenth avenue						.24

SCHEDULE OF CONTRACTS—EIGHTH WARD—CONTINUED.

DATE.	CONTRACTOR.	STREET.	FROM.	To.	Oil Lamps, per lamp per year.	Alley paving, per square yard.	Grading sidewalks, per cubic yard.	Graveling, per cubic yard.	Gutter paving, per square yard.	Sidewalk plankings, per lineal foot.
Aug.	8 Julius Duenke	Mineral	W. line of Walker's Pt. Addition.	Tenth avenue	.....	.....	.....	.....	.44 $\frac{3}{4}$	.....
Sept.	8 Lorenz Seymer	Scott	Ninth avenue	Eleventh avenue	.....	.....	.17	.64	.....	.....
	8 Louis Pegler	Scott	Ninth avenue	Eleventh avenue	.....	.....	.....	.....	.45	.....
	8 Jas. O'Connor	Scott	Ninth avenue	Eleventh avenue	.....	.....	.....	.....	.....	23 $\frac{3}{4}$
Oct.	2 J. Dierschow	Mineral	Tenth avenue	Eleventh avenue	.....	.....	.18	.....	.....	.....
	2 Jas. O'Connor	Mineral	Tenth avenue	Eleventh avenue	.....	.....	.....	.....	.....	23 $\frac{3}{4}$
	2 Julius Duenke	Mineral	Tenth avenue	Eleventh avenue	.....	.....	.....	.65 $\frac{3}{4}$	.....	.....
	2 L. Seymer	Mineral	Tenth avenue	Eleventh avenue	.....	.....	.....	.....	.44	.....
Nov.	5 A. Weidner	Eighteenth avenue	National avenue	Pierce street	.....	.....	.19	.....	.....	.....
	5 Julius Duenke	Eighteenth avenue	National avenue	Pierce street	.....	.....	.....	.62 $\frac{1}{2}$	.39 $\frac{1}{4}$	.....
	5 J. F. Beers	Eighteenth avenue	National avenue	Pierce street	.....	.....	.....	.....	.....	25 $\frac{1}{2}$
Dec.	12 Louis Pegler	Alley, Block 2, Walker's Point Addition.	Railroad	Madison street	.....	.56	.....	.....	.....	.....
	12 John Thiede	Alley, Block 3, Walker's Point Addition.	Fifth avenue	Sixth avenue	.....	.58	.....	.....	.....	.....

SCHEDULE OF CONTRACTS—NINTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM	To	Alley Paving, per square yard.	Grading, per cubic yard.	Gravelling, per cubic yard.	Gutter Paving, per square yard.	Planking, per lineal foot.	Cedar block pavement, per sq. yard.	Stone curbing, per lineal foot.	Lighting Lamps, per lamp per year.
April 5	Henry Vogt	S. Alley block 4, Plankinton ad. Brown	Eighteenth	Nineteenth	.60							
May 5	Carl Schmidt	Twenty-fourth	Twenty-first	Twenty-fourth		.24	1.15	.45	.27½			
May 13	Fred. Sell	Twenty-fourth	Vliet	Walnut			.80	.35				13.50
May 20	John Kohl	Twenty-fourth	Vliet	Walnut					.25%			
June 20	D. W. Purtell	Alley, Block 113	Vliet	Mill	.70			1.10 9-10		1.16 9-10	.63	
June 10	John Kohl	Vliet	Twelfth	Twentieth								
July 17	Sullivan & O'Donnell	Vliet	Twelfth	Twentieth								
July 17	Edwin Hyde, assignee of V. Kuhlmann	Vliet	Twelfth	Twentieth								
Aug. 5	James O'Donnell	Vliet	Twelfth	Twentieth					.33			

SCHEDULE OF CONTRACTS—TENTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM	TO	Grading per cubic yard.	Graveling per cubic yard.	Alley Paving per square yard.	Gutter Paving per square yard.	Planking per lineal foot.	Lighting Lamps per lamp per year.	Gravel for street repairs per cubic yard.	Stone Pavement per square yard.	Wood curbing, per lineal foot.
Mar. 29	John Denker...	N & S Alley, Block 3, Viet's Add.	Sherman	Wine			.63						
29	James Markey	Louis Avenue	Lee	Centre					.10½				
29	F. Grokowsky	Louis Avenue	Lee	Centre	.17	1.10							
May 13	Henry Vogt	Louis Avenue	Lee	Centre				.43					
13	Fred Sell									13 50			
28	Ed. Becker	Gravel for st. repairs									.97		
July 8	Carl Schmidt	Twelfth	Lee	Centre	.22			.41½					
8	Henry Vogt	Twelfth	Lee	Centre					.24¾				
25	Henry Vogt	Twelfth	Centre	Locust		1.03			.25				
25	John Roehring	Twelfth	Centre	Locust									
25	Carl Schmidt	Twelfth	Centre	Locust		1.00							
25	Carl Schmidt	Twelfth	Centre	Locust				.42½					
25	Henry Vogt	Louis Avenue	North Avenue	Lee								.65	
Aug. 8	F. Gottschalk	E Alley, Block 1, in Subdivision of W ½ of E ½ of SW ¼, Section 17	Lee	Wright			.70						
Sept. 3	Pat Shea	Twelfth	Walnut	Teutonia Str. and Garfield Ave.									17½
Oct. 2	F. Gottschalk	Alley, Block 214, Williams Add.	Harmon	Lloyd			.75						
20	J. F. Beers	Twelfth	Walnut	Garfield Avenue					.47				

SCHEDULE OF CONTRACTS—ELEVENTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM	TO	Gravel for street rep's.	Grading, per cubic yard.	Graveling, per cubic yard.	Gutter paving, per square yard.	Alley Paving, per square yard.	Plankings, per lineal foot.	Stone pavement, per square yard.
Mch	8 Matt. Heiden	Lincoln Avenue	Windlake Avenue.	Forest Home Ave.	.....	.10	.....	.....	.....	.....	.....
	8 Adolph Weidner	Lincoln Avenue	Windlake Avenue	Forest Home Ave.	.....	.....	.35	.....	.....	.....	.....
	8 Adolph Weidner	Rogers	Third Avenue....	E. line House of Correction prop.	.....	.12	.....	.43	.....	.....	.....
	8 Julius Duemke	Rogers	Third Avenue	E. line House of Correction prop.	.....	.....	.53	.....	.....	.....	.....
	8 John Dierschow	Rogers	Third Avenue	E. line House of Correction prop.	.....	.....	.....	.....	.....	.28	.....
May	21 F. Lange	Cross	Pearl	Eleventh Avenue.	.....	10	.....	.27½	.....	.....	.....
	21 Julius Duemke	Cross	Pearl	Eleventh Avenue.	.....	.....	.44¾	.....	.....	.....	.....
	21 J. Dierschow	Cross	Pearl	Eleventh Avenue.	.....	.....	.....	.....	.....	.27	.....
	21 Julius Duemke	E. and W. Alley, block 11, Mitchell's subdivision	Sixth Avenue....	Fifth Avenue....	.....	.....	.....	.....	.77	.....	.....
	21 L. Pegler	N. and S. Alley, block 11, Mitchell's subdivision.	Maple.....	Burnham.....	.....	.....	.....	.....	85	.....	.....
May	6 B. Degentesch.	Gravel for street repairs.	Second Avenue....	Third Avenue....	.40	.....	.....	.....	.....	.....	.....
	6 M. Heiden	N. and S. Alley, block 144, L. W. Week's subdivision.	Second Avenue....	Third Avenue....	.....	.....	.....	.....	.67	.....	.....
	6 Lorenz Seymer	N. and S. Alley, block 134, L. W. Week's subdivision.	Orchard.....	Lapham.....	.....	.....	.....	.....	.74 4-10	.....	.....
June	7 J. Dierschow	Orchard.....	Third Avenue....	Fourth Avenue....	.....	.....	.....	.....	.....	.....	.60
	7 J. Duemke	Orchard.....	Third Avenue....	Fourth Avenue....	.....	.17	.....	.....	.....	.....	.....
June	26 Matt. Heiden	Alley, block 138, L. W. Week's subdivision.	Orchard.....	Lapham.....	.....	.....	.....	.....	.70	.....	.....
	26 Matt. Heiden	Alley, block 140, L. W. Week's subdivision.	Lapham.....	Mitchell.....	.....	.....	.....	.....	.65	.....	.....

SCHEDULE OF CONTRACTS—ELEVENTH WARD—CONTINUED.

DATE.	CONTRACTOR.	STREET.	FROM	To	Gravel for street rep's.	Grading, per cubic yard.	Graveling, per cubic yard.	Gutter paving, per square yard.	Alley paving, per square yard.	Planking, per lineal foot.	Stone pavement, per square yard.
July	Theo. Egelhoff...	Seventh Avenue.....	Harmeyer's subdiv	Becher .....	.....	.....	.....	.....	.....	.23	.....
17	Wm. Gutknecht..	Seventh Avenue.....	Harmeyer's subdiv	Becher .....	.....	.15	.44 $\frac{3}{4}$	.45	.....	.25 $\frac{1}{2}$	.....
17	Lorenz Seymer ..	Burnham.....	Eighth Avenue....	Tenth Avenue....	.....	.....	.....	.....	.....	.....	.....
17	Wm. Gutknecht..	Burnham.....	Eighth Avenue....	Tenth Avenue....	.....	.14	.45	.....	.....	.....	.....
17	L. Pegler.....	Burnham.....	Eighth Avenue....	Tenth Avenue....	.....	.....	.....	.45	.....	.....	.....
25	Julius Duemke...	N. Alley, block 7, Mitchell's subdivision.	Sixth Avenue.....	Seventh Avenue....	.....	.....	.....	.....	.72	.....	.....
26	Lorenz Seymer ..	N. and S. Alley, block 137 $\frac{1}{2}$, L. W. Week's subdivision.	Orchard.....	Lapham.....	.....	.23	.....	.....	.....	.....	.....
26	Matt. Heiden	N. and S. Alley, block 137, L. W. Week's subdivision.	Orchard	Lapham.....	.....	.....	.....	.....	.65	.....	.....
Sept. 9	Julius Duemke...	Alley, block 10, Mitchell's subdivision.	Maple	Burnham.....	.....	.....	.....	.....	.59	.....	.....
9	Julius Duemke...	Alley, block 10, Mitchell's subdivision.	Sixth Avenue.....	Seventh Avenue....	.....	.....	.....	.....	.62	.....	.....
Oct. 2	Lorenz Seymer...	S. Alley, block 141, L. W. Week's subdivision.	Fifth Avenue.....	Sixth Avenue....	.....	.25	.....	.....	.....	.....	.....
2	I. Dierschow.....	S. Alley, block 141, L. W. Week's subdivision	Fifth Avenue.....	Sixth Avenue....	.....	.....	.....	.....	.60	.....	.....
2	J. Dierschow.	N. Alley, block 141, L. W. Week's subdivision.	Fifth Avenue	Sixth Avenue....	.....	.....	.....	.....	.59	.....	.....
2	M. Heiden	N. Alley, block 141, L. W. Week's subdivision.	Fifth Avenue.....	Sixth Avenue....	.....	.28	.....	.....	.....	.....	.....

SCHEDULE OF CONTRACTS—ELEVENTH WARD—CONTINUED.

DATE.	CONTRACTOR.	STREET.	FROM	TO	Planking, per lineal foot.	Grading, per cubic yard.	Gutter paving, per square yard.	Graveling per cubic yard.	Alley paving, per square yard.	House drains, per lineal foot.	Long water service, per lineal foot.	Short water service, per lineal foot.
Oct. 9	P. H. Murphy..	Mitchell.....	First Avenue...	Seventh Avenue..	.....	.....	.....	.....	.....	52	48	.98
15	A. Weidner	Rogers	Fifth Avenue...	Tenth Avenue...	.26	.....	.....	.....	.....	.....	.....	.....
15	Wm. Gutknecht	Rogers	Fifth Avenue...	Tenth Avenue...	.....	.14 $\frac{3}{4}$	.40	.....	.....	.....	.....	.....
15	Julius Duemke.	Rogers	Fifth Avenue...	Tenth Avenue...	.....	.....	.....	.43 $\frac{1}{2}$	.....	.....	.....	.....
Dec. 23	A. Weidner	Alley, block 139, L. W. Week's subdivision.	Lapham.....	Mitchell.....	.....	.23	.....	.....	.....	.....	.....	.....
23	M. Heiden.....	N. and S. Alley, block 139, L. W. Week's subdiv.	Lapham.....	Mitchell.....	.....	.....	.....	.....	.59	.....	.....	.....
23	J. Dierschow...	N. Alley in block 139, L. W. Week's subdivision	Seventh Avenue	Eighth Avenue...	.....	.22	.....	.....	.58	.....	.....	.....
23	M. Heiden.....	S. Alley in block 139, L. W. Week's subdivision	Seventh Avenue	Eighth Avenue...	.....	.....	.....	.....	.59	.....	.....	.....
23	Julius Duemke.	S. Alley in block 139, L. W. Week's subdivision	Seventh Avenue	Eighth Avenue...	.....	.19	.....	.....	.....	.....	.....	.....

SCHEDULE OF CONTRACTS—TWELFTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM	TO	Grading per cubic yard.	Graveling per cubic yard.	Paving gutters, per square yard.	Oil Lamps, per lamp per year.	Gravel for street repairs.	Planking Sidewalks per lineal foot.	Alley paving, per square yard.
March 4	P. R. Wolf.	Gravel for street repairs.	Greenbush	First avenue.				\$10.00.			
May 13	Julius Duenke	Burnham.	Greenbush	First avenue.					.71		
July 25	Jos. Ody.	Burnham.	Greenbush	First avenue.	.13 $\frac{3}{4}$	.63 $\frac{3}{4}$	.44 $\frac{3}{4}$			.25	
	L. Seymer	Alley, Block 148, in Huidekoper's Subdivision and Alley, Block 138, in A. D. Smith's Subdivision.	First avenue.	Grove.	.25						
Sept. 20	M. Heiden	Alley, Block 148, in Huidekoper's Subdivision and Alley, Block 138, in A. D. Smith's Subdivision.	First avenue.	Grove.							
	John Dierschow.	Allis.	S. Bay.	Lincoln avenue.	.15	.75	.42				.65
Oct. 2	Chr. Beck.	Lincoln avenue.	Howell avenue.	First avenue.		.60				.24	
2	M. Heiden.	Lincoln avenue.	Howell avenue.	First avenue.	.22						
2	C. Beck.	Lincoln avenue.	Howell avenue.	First avenue.							

SCHEDULE OF CONTRACTS—THIRTEENTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM	TO	Grading, per cubic yard.	House drains, per lineal foot.	Long water service, per lineal foot.	Short water service, per lineal foot.	Cedar block pavem't, per square yard.	Alley paving, per square yard.	Gutter paving, per square yard.	Wood curbing, per lineal foot.
April 5	Hehry Vogt	Sixth	Centre	Chambers	.11½							
May 28	R. J. Finn	Third	Lee	Centre			.44					
June 3	Jacob Winkler	Third	Lee	Centre		.41		.85				
June 3	John Roehring	Alley, B'tk 206 Wright's Addition.	North Avenue	Lee						.87		
July 25	Patrick Drew	Third	Lee	Centre					1.09 6-10		1.09 6-10	
July 25	Jas. O'Connor	Third	Lee	Centre								.14

STREETS SPRINKLED—FIRST WARD.

STREET.	FROM.	TO.
North Water.....	Division	Pearson.
East Water.....	Division	Cherry Street Bridge.
Market.....	Division	North Water.
Broadway	Division	North Water.
Milwaukee.....	Division	North Water.
Jefferson	Division	Knapp.
Jackson	Division	Pleasant.
Van Buren.....	Division	Lyon.
Van Buren.....	Lyon	Brady.
Cass.....	Division	Kewaunee.
Marshall.....	Division	Kewaunee.
Astor	Division	Brady.
Franklin.....	Division	Brady.
Farwell Ave.....	Franklin	90 ft. N. of Irving Place.
Prospect Ave	Division	Windsor Place.
North half of Division	Milwaukee River.....	Lake.
Knapp.....	Broadway	North Water.
Knapp.....	Milwaukee.....	Prospect Avenue.
Ogden.....	North Water.....	Franklin.
Lyon	Jackson	Cass.
Lyon	Cass.....	Marshall.
Lyon	Marshall.....	Webster Place.
Pleasant	Jefferson.....	Franklin.
Pleasant	North Water	Milwaukee River.
Brady	Farwell Avenue	Prospect Avenue.
Brady	Astor	Marshall
Royal Place	Farwell Avenue	Prospect Avenue.
Dane Place	Farwell Avenue	Prospect Avenue.
Lafayette Place.....	Prospect Avenue.....	Terrace Avenue.
Terrace Avenue.....	Lafayette Place	Wyoming Place.
Albion	Prospect Avenue.....	Doty.
Kewaunee	Cass.....	Racine.
Racine	Pleasant.....	Brady.
Cambridge Avenue	Farwell avenue.....	Royal Place.

STREETS SPRINKLED—SECOND WARD.

STREET.	FROM	TO
N, $\frac{1}{2}$ Cedar, except from Eighth to Ninth.	West Water.....	Eighteenth.
State.....	Milwaukee River.....	Twenty-first.
Prairie.....	Third.....	Eighth.
Prairie.....	Ninth.....	Fourteenth.
Prairie.....	Fourteenth.....	Fifteenth.
Chestnut.....	Milwaukee River.....	Sixteenth.
Chestnut.....	Sixteenth.....	Twenty-second.
Poplar.....	Third.....	Seventh.
Cold Spring Ave.....	Tenth.....	Fourteenth.
Cold Spring Ave.....	Fourteenth.....	Sixteenth.
S. $\frac{1}{2}$ Vliet.....	Third.....	Twentieth.
Winnebago.....	Chestnut.....	Vliet.
W. Water.....	Cedar.....	Third.
Third.....	Cedar.....	Vliet.
Fourth.....	Cedar.....	Vliet.
Fifth.....	Cedar.....	Vliet.
Sixth.....	Cedar.....	Vliet.
Seventh.....	Cedar.....	Vliet.
Eighth.....	Cedar.....	Vliet.
Ninth.....	Cedar.....	Vliet.
Tenth.....	Cedar.....	Winnebago.
Eleventh.....	Cedar.....	Vliet.
Twelfth.....	Cedar.....	Vliet.
Thirteenth.....	Cedar.....	Vliet.
Fourteenth.....	Cedar.....	Vliet.
Fifteenth.....	Cedar.....	Cold Spring Ave.
Fifteenth.....	Cold Spring Ave.....	Vliet.

STREETS SPRINKLED—THIRD WARD.

STREET.	FROM	TO
East Water	Wisconsin	Milwaukee River.
Broadway	Wisconsin	Milwaukee River.
Milwaukee	Wisconsin	Erie
Jefferson	Wisconsin	Menomonee.
Jefferson	Menomonee	Erie.
Jackson	Wisconsin	Menomonee.
Van Buren	Wisconsin	Detroit.
Cass	Wisconsin	Huron.
S. ½ Wisconsin	Milwaukee River	C. & N. W. R. R.
Michigan	East Water	C. & N. W. R. R.
Huron	Milwaukee River	Van Buren.
Huron	Cass	Van Buren.
Detroit	East Water	Beach.
Buffalo	East Water	Beach.
Chicago	East Water	Jackson
Erie	East Water	Jackson.
Juneau	Milwaukee	C. & N. W. R. R.

STREETS SPRINKLED—FOURTH WARD.

STREET.	FROM	To
W. Water.....	Cedar	Menomonee River.
Second	West Water.....	West Water.
Third	Cedar	Fowler.
Fourth	Cedar	Fowler.
Fifth	Cedar	Fowler.
Sixth	Wells.....	Fowler.
Seventh	Wells.....	Fowler.
Eighth	Wells.....	Hinman.
Ninth.....	Cedar	Grand Avenue.
Ninth.....	Sycamore.....	Clybourn.
Tenth.....	Cedar	Clybourn.
Eleventh.....	Cedar	Clybourn.
Twelfth.....	Cedar	Grand Avenue.
Thirteenth.....	Cedar	Clybourn.
Fourteenth.....	Cedar	Clybourn.
Fifteenth.....	Cedar	Clybourn.
Sixteenth.....	Cedar	Clybourn.
Seventeenth.....	Cedar	Clybourn.
Eighteenth.....	Cedar	Grand Avenue.
Nineteenth.....	Grand Avenue.....	Clybourn.
Nineteenth.....	Grand Avenue.....	Cedar.
First Avenue.....	Canal Street.....	Sixth Street Bridge.
Clermont	Muskego Avenue.....	Clybourn.
Hinman	Fowler.....	W line of Lot 7, Blk 137.
Fowler.....	West Water.....	Hinman.
Hill Street and Fowler.....	Clybourn.....	Tenth.
Clybourn.....	Milwaukee River.....	Fourteenth.
Sycamore.....	Milwaukee River.....	Thirteenth.
Grand Avenue.....	Milwaukee River.....	City Limits.
Wells.....	Milwaukee River.....	City Limits.
S. ½ Cedar, except between Eighth and Ninth Sts.	W. Water.....	Eighteenth.
Washington Avenue.....	Cedar	Grand Avenue.
Twenty-fourth.....	Wells.....	Cedar.
Reed	Menomonee River.....	S line of Fourth Ward.

STREETS SPRINKLED—FIFTH WARD.

STREET.	FROM	To
Barclay.....	South Water.....	Florida.
Barclay.....	Scott.....	Washington.
Ferry.....	East Water St. Bridge.....	Lake.
Clinton.....	South Water.....	Railroad.
Reed.....	Milwaukee River.....	Railroad.
Hanover.....	Oregon.....	Railroad.
Greenbush.....	Florida.....	Railroad.
Grove.....	Florida.....	Railroad.
E ½ First Avenue.....	Canal.....	Railroad.
South Water.....	Reed.....	Lake.
Lake.....	Hanover.....	S. Water.
Oregon.....	Hanover.....	Clinton.
Florida.....	Barclay.....	First Avenue.
Virginia.....	Clinton.....	First Avenue.
Park.....	Clinton.....	First Avenue.
Pierce.....	Reed.....	First Avenue.
National Avenue.....	East line Block 110.....	First Avenue.
Walker.....	Clinton.....	First Avenue.
Mineral.....	Clinton.....	First Avenue.
Washington.....	Railroad track.....	First Avenue.
Scott.....	Barclay.....	First Avenue.
Madison.....	Clinton.....	First Avenue.
N ½ Railroad.....	Clinton.....	First Avenue.
Between blocks.....	53.....	54.
College Place.....	Hanover.....	Greenbush.

STREETS SPRINKLED—SIXTH WARD.

STREET.	FROM	TO
Second	Sherman.....	Lloyd.
Third.....	Vliet.....	North Avenue.
Fourth.....	Vliet.....	Lloyd.
Fifth.....	Vliet.....	Cherry.
Fifth.....	Galena.....	Harmon.
Sixth.....	Vliet.....	Cherry.
Sixth.....	Galena.....	Walnut.
Sixth.....	Sherman.....	Harmon.
East half Seventh.....	Vliet.....	Lloyd.
North half Vliet.....	Third.....	Seventh.
Cherry.....	Second.....	Seventh.
Galena.....	Second.....	Seventh.
Walnut.....	Second.....	Seventh.
Sherman.....	Third.....	Seventh.
Reservoir Ave.....	Third.....	Seventh.
Harmon.....	Second.....	Seventh.
Garfield Avenue.....	Third.....	Holton.
Point.....	Cherry Street Bridge.....	Canal.
Lloyd.....	Third.....	Sixth.
Island Avenue.....	Sherman.....	Walnut.
Dock.....	Pleasant Street Bridge.....	Railroad track.
First.....	Sherman.....	Reservoir Avenue.
Second.....	Lloyd.....	North Avenue.
Sherman.....	Third.....	Island Avenue.
Sixth.....	Walnut.....	Sherman.
Cape.....	Dock.....	Point
Sixth.....	Harmon.....	Lloyd.

STREETS SPRINKLED—SEVENTH WARD.

STREET	FROM.	TO.
River.....	Oneida	Division.
East Water.....	Wisconsin	Division.
Market	Mason.....	Division.
Broadway	Wisconsin	Division.
Milwaukee.....	Wisconsin	Division.
Jefferson.....	Wisconsin	Division.
Jackson	Wisconsin	Division.
Van Buren.....	Wisconsin	Division.
Cass.....	Wisconsin	Division.
Marshall.....	Wisconsin	Division.
Astor.....	Oneida	Division.
Waverly Place.....	Martin.....	Division.
Lake Avenue.....	Biddle.....	Division.
North half Wisconsin.....	Milwaukee River.....	C. & N. W. R. R.
Mason	Milwaukee River.....	Astor.
Oneida	Milwaukee River.....	Astor.
Biddle.....	River Street.....	Lake Avenue.
Martin.....	Milwaukee River.....	Lake Avenue.
Johnson	River Street	Milwaukee.
South half Division	River Street	Lake Avenue.

STREETS SPRINKLED—EIGHTH WARD.

STREET.	FROM	TO
W ½ First Avenue	Canal	Railroad.
Second Avenue	Pierce	Railroad.
Third Avenue	National Avenue	Railroad.
Fourth Avenue	Park	Railroad.
Fifth Avenue	National Avenue	Railroad.
Sixth Avenue	National Avenue	Railroad.
Seventh Avenue	National Avenue	Railroad.
Virginia	First Avenue	Fourth Avenue.
Park	First Avenue	Seventh Avenue.
Pierce	First Avenue	Fourth Avenue.
National Avenue	First Avenue	Washington Avenue.
Walker	First Avenue	Seventh Avenue.
Mineral	First Avenue	Seventh Avenue.
Washington	First Avenue	W line of Walker's Pt Ad
Scott	First Avenue	Seventh Avenue.
Madison	First Avenue	Seventh Avenue.
N ½ Railroad	First Avenue	Eighth Avenue.
Pierce	Fourth Avenue	Sixth Avenue.
Sixth Avenue	Pierce	Park.
N ½ Railroad	Eighth Avenue	Eleventh Avenue.
Eleventh Avenue	Railroad	Washington.
Washington	Ninth Avenue	Eleventh Avenue.

STREETS SPRINKLED—NINTH WARD.

STREET.	FROM.	TO.
West half Seventh	Vliet.....	Walnut.
Eighth.....	Vliet.....	Walnut.
Ninth.....	Vliet.....	Walnut.
Tenth.....	Mill.....	Walnut.
Eleventh.....	Vliet.....	Walnut.
Twelfth.....	Vliet.....	Walnut.
Thirteenth.....	Vliet.....	Walnut.
Fourteenth.....	Vliet.....	Fond du Lac Avenue.
North half Vliet.....	Seventh.....	Twentieth.
Mill.....	Seventh.....	Eleventh.
Cherry.....	Seventh.....	Eighth.
Cherry.....	Tenth.....	Twentieth.
Galena.....	Seventh.....	Twentieth.
South half Walnut.....	Seventh.....	Fond du Lac Avenue.
South half Fond du Lac Avenue	Walnut.....	North Avenue.
Nineteenth.....	Cherry.....	Galena.
Walnut.....	Fond du Lac Avenue.....	Twentieth.

STREETS SPRINKLED—TENTH WARD.

STREET	FROM	To
West half Seventh	Walnut	Harmon.
North half Walnut	Seventh	Fond du Lac Avenue.
Teutonia	Garfield Avenue	Hopkins Road.
Ninth	Walnut	Garfield Avenue.
Tenth	Walnut	Lloyd.
Eleventh	Walnut	Garfield Avenue.
Twelfth	Walnut	Garfield Avenue.
North half Fond du Lac Ave...	Walnut	North Avenue.
Germania	Seventh	Ninth.
Seventh	Harmon	Lloyd.
Eighth	Germania	North Avenue.
Tenth	Garfield Avenue	Lloyd.
Garfield Avenue	Eighth	Twelfth.
Lloyd	Tenth	Twelfth.
Eleventh	Garfield Avenue	Lee.
North Avenue	Seventh	Eighth.
North Avenue	Teutonia	Eighth.
Sherman	Ninth	Tenth.
Lloyd	Eighth	Tenth.
Thirteenth	Fond du Lac Avenue	Vine.

STREETS SPRINKLED—ELEVENTH WARD.

STREET.	FROM.	TO.
West half First Avenue	Railroad	Mitchell.
Second Avenue	Railroad	Mitchell.
Third Avenue	Railroad	Mitchell.
Fourth Avenue	Railroad	Mitchell.
Sixth Avenue	Railroad	Mitchell.
Seventh Avenue	Railroad	Mitchell.
Seventh Avenue	Mitchell	Maple.
South half Railroad	First Avenue	Eighth Avenue.
Mitchell	First Avenue	Eighth Avenue.
Lapham	First Avenue	Seventh Avenue.
Forest Home Avenue	Mitchell	Bismarck Avenue.
South half Railroad	Eighth Avenue	Muskego Avenue.
Windlake Avenue	Mitchell	Fifth Avenue.
Muskego Avenue	Railroad	Forest Home Avenue.
Forest Home Avenue	Eleventh Avenue	Muskego Avenue.

STREETS SPRINKLED—TWELFTH WARD.

STREET.	FROM	To
Clinton	Railroad	Kinnickinnic Avenue.
Kinnickinnic Avenue	Mitchell	South Bay.
Kinnickinnic Avenue	Clinton	Mitchell.
Reed	Railroad	Mitchell.
E $\frac{1}{2}$ First Avenue	Railroad	Mitchell.
S $\frac{1}{2}$ Railroad	Clinton	First Avenue.
Mitchell	Grove	First Avenue.
Maple	Kinnickinnic Avenue	Hanover.
South Bay	Kinnickinnic Avenue	Kenesaw.
Hanover	Railroad	Orchard.
Maple	Hanover	Grove.
Orchard	Clinton	Reed.
Orchard	Reed	Greenbusch.
Hanover	Orchard	Lapham.
Mitchell	Greenbush	Grove

STREETS SPRINKLED—THIRTEENTH WARD.

STREET.	FROM	To
Third	North Avenue	Lee.

REPORT
OF THE
CITY ENGINEER
FOR THE YEAR
1884.

REPORT OF THE CITY ENGINEER.

CITY ENGINEER'S OFFICE,
MILWAUKEE, January, 1885. }

To the Honorable the Board of Public Works:

GENTLEMEN:—Pursuant to the requirements of the charter, I herewith respectfully present to you the annual report of the operations of the different departments under my charge for the year 1884.

STREET IMPROVEMENTS.

The total length of streets and alleys improved during the year 1884 was 15 $\frac{59}{100}$ miles, and according to the reports of the assistant engineers, which are herewith attached, cost in the aggregate the sum of \$236,754.56.

Estimates were also prepared for 9 $\frac{156}{1000}$ miles of contemplated street and alley work.

The work executed during the year in this branch of public improvements, classified, was as follows:

148,022 cubic yards of excavation,	}	at a cost of.....	\$35,158 98
42,342 " " " filling,			
43,126 " " " gravel, at a cost of.....			31,981 69
18,297 square yards of granite block paving, at a cost of.....			41,971 09
55,159 " " " cedar block paving, at a cost of.....			46,859 32
10,026 " " " McAdam paving, at a cost of.....			10,700 00
20,301 " " " alley paving, at a cost of.....			10,801 84
53,672 " " " gutter paving, at a cost of.....			23,956 86
15,729 " " " sodding, at a cost of.....			1,494 92
21,759 lineal feet of stone curbing, at a cost of.....			14,304 55
15,077 " " " wood curbing, at a cost of.....			1,709 26
1,955 " " " oak planking, at a cost of.....			2,443 75
60,457 " " " sidewalk planking, at a cost of.....			15,372 30
Total cost of.....			\$236,754 56

In comparing with the report for 1883, you will find that over 30 per cent. more of work was done during the past year.

In paving but 8,160 feet were added to the length of paved streets, the balance of the pavement laid having replaced worn-out wood pavement.

The entire length of improved streets in the city are as follows: Of paved streets $27\frac{238}{1000}$ miles, and of streets otherwise improved $137\frac{2}{100}$ miles.

Profiles were prepared and grades established upon about 8 miles of newly opened streets.

I herewith also submit a tabular statement, showing the stage of the water in our rivers for the year 1884, with reference to the city datum line.

STAGE OF WATER DURING THE YEAR 1884.

MONTH.	HIGHEST—FEET.	LOWEST—FEET.	MEAN—FEET.
January.....	+ 1.400	0.100	0.774
February.....	1.200	0.600	0.908
March.....	1.600	0.500	0.988
April.....	1.800	0.800	1.257
May.....	1.800	1.100	1.475
June.....	2.000	1.500	1.653
July.....	2.000	1.200	1.513
August.....	1.700	1.000	1.384
September.....	1.500	0.700	1.166
October.....	1.800	0.500	1.168
November.....	1.400	0.200	0.806
December.....	1.300	0.300	0.714
Year 1884.....	2.000	0.100	1.155

WATER WORKS.

The receipts and disbursements of this department since its organization are as follows:

RECEIPTS OF WATER FUND.

Received from sale of bonds and interest	\$1,563,332 78
Received from City on account of bridge	20,000 00
Received from water pipe assessments up to Dec. 31, 1882.....	545,819 68
Received for water rates, ferules, etc.	
Up to Dec. 31, 1883	1,231,019 71
Up to Dec. 31, 1884.....	215,228 44
Total receipts to date in Water Fund.....	\$3,575,400 61

RECEIPTS OF NEW CONSTRUCTION FUND.

Received from sale of bonds.....	\$150,000 00	
Received from water pipe assessments		
From Dec. 31, 1882, to Dec. 31, 1883	9,843 03	
to Dec. 31, 1884	37,208 91	\$197,051 94
Total receipts.....		\$3,772,452 55

DISBURSEMENTS.

Total cost of construction from August, 1871,		
Up to Dec. 31, 1883.....	\$2,386,873 40	
Dec. 31, 1884.....	116,424 16	\$2,503,297 56
Stock on hand.....		10,538 45
Total cost of maintenance up to		
Dec. 31, 1883.....	\$655 021 96	
Dec. 31, 1884.....	96,497 03	751,518 99
Stock on hand		10,074 39
Total cost of construction and maintenance.....		\$3,275,429 39
Interest paid on water bonds		
in 1880.....	\$48,493 50	
in 1881.....	63,506 50	
in 1882.....	50,000 00	
in 1883.....	100,000 00	
in 1884.....	102,055 01	
Total interest paid out of water fund.....		\$364,055 01
Amount paid towards retiring water bonds in 1884		10,000 00
Delinquent water pipe assessments on hand.....		16,479 59
Balance on hand in construction fund		61,837 25
Balance on hand in water fund.....		44,092 17
Balance in hands of collector.....		559 14
		<u>\$3,772,452 55</u>

The expenditures for construction up to date have been as follows:

Reservoir	\$145,220 14
North Point Pumping Works	338,807 71
North Point Pumping Engines.....	267,935 97
River Pumping Works.....	6,067 09
High Service (West Side) Pumping Works.....	26,972 19
High Service (West Side) Pumping Engines	18,338 29
Pipe Distribution.....	1,532,409 62
North Street Bridge.....	88,779 08
Office Expenditures and Instruments.....	15,111 63
Engineering and Salaries	62,526 12
Telegraph Line.....	1,050 92
Tunnel Intake.....	78 80
Total cost of construction	<u>\$2,503,297 56</u>

The total amount of water pumped at the North Point Pumping Station and the revenue per million gallons received by the city therefrom, since 1874 was as follows:

YEAR.	TOTAL GALLONS WATER PUMPED.	REVENUE PER MILLION GALLONS
1875	953,699,955	\$47 41
1876	1,557,313,492	41 90
1877	2,534,623,650	29 36
1878	3,241,395,935	26 68
1879	3,870,411,590	25 28
1880	4,490,454,297	25 06
1881	4,855,501,612	27 36
1882	5,362,000,765	32 77
1883	5,397,876,086	34 27
1884	5,351,549,821	38 35

The total receipts of the Water Department for the year 1884 were as follows:

For water rates	\$205,227 76
ferrules, meters and other miscellaneous items	8,102 81
street sprinkling for the year 1883	1,596 00
water rates by city orders	176 87
By delinquent rates, fines, etc.	125 00
Total cash receipts during 1884	\$215,228 44
Balance on hand in water fund January 1, 1884	35,081 41
Total	\$250,309 85

The total expenditures of the Water Department for the year 1884 were as follows:

For maintenance	\$94,414 85
interest on water bonds	102,055 01
retiring water bonds	10,000 00
Total expenditure	\$206,469 86

The following is the balance due the Water Department for various items for the year 1884:

From private consumers, water rates uncollected	\$284 96
the city—water rates uncollected	6,308 42
the city—for hydrants	18,400 00
the wards—for street sprinkling	8,531 75
For branch connections	225 59
Total balance due for 1884	\$33,750 72

The following is a statement of the total actual cost of maintenance of the Water Department for the past year, giving credits only for stock on hand, but not for cash received for material furnished or work done:

North Point Pumping Engines.....	\$46,805 14
North Point Pumping Works	2,230 47
High Service (West Side) Pumping Engines.....	7,189 08
High Service (West Side) Pumping Works.....	154 06
Distribution.....	10,426 55
Reservoir	9,879 92
North Street Bridge.....	960 00
Telephone Line.....	185 00
Meters.....	7,218 90
Collector's Office	9,181 36
Machine Shop.....	111 89
Ferrules and Boxes.....	2,325 91
Water Rates Refunded.....	28 75
<hr/>	
Making a total cost of	\$96,497 03

The total expenditures for construction for the year were as follows (no deductions):

Extension of Water Mains.....	\$71,649 55
High Service Pumping Engine.....	11,068 26
At North Point Pumping Station	36,580 34
Reservoir	848 00
Tunnel Intake.....	78 80
<hr/>	
Total expenditures for construction.....	\$120,224 95

Of the above amount \$37,208.91 were assessed against property benefited by the laying of water mains, and which amount will be returned to the construction fund.

NORTH POINT PUMPING WORKS.

The appearance of this station has been considerably improved by grading and sodding, by macadamizing the driveway, by adding 264 feet of new dock front on the lake shore, giving about one acre additional yard room, and also by erecting an additional new boiler house, coal house, repair shop and stack to the north of the engine house, thereby completing the plant.

Some 25,000 cubic yards of earth were moved by Mr. P. Drew, the grounds drained, sodded, etc., at a cost of \$10,334.50. The dock consisting

of continuous close piling, cost \$2,904.00. The buildings were erected by Mr. J. Kraatz at a cost of \$21,819.80, and were completed December 15th. Specifications are now out for a battery of three steel boilers to be completed early in the year.

The pumping engines at this station have not needed any special repairs, but it was discovered that the same spring which had caused such serious trouble with the foundations of the old engines, was making inroads upon the foundation of the new engine. Accordingly on the 11th day of May this engine was stopped, the valve chambers and bottom castings taken out of the pump well, and a continuous heavy ribbed cast iron bed plate, consisting of three sections and covering the entire bottom of the well, was put in place. This plate weighed 35,959 pounds, and was cast by E. P. Allis & Co. This work was completed and the engine again put into service on July 20th, since which time no further inconvenience has been experienced.

During this time the 30-inch force main, leading from this engine to the tower, was lowered some six feet, which was made necessary by the regrading of the slopes to gain room for the new buildings.

The following table shows the amount of water pumped and of coal consumed since 1877:

YEAR.	TOTAL GALLONS PUMPED.	ANNUAL INCREASE IN GALLONS	TOTAL POUNDS OF COAL CONSUMED.	ANNUAL INCREASE OR DECREASE OF COAL.
1878....	3,241,395,935	706,772,285	6,241,510	INCREASE. 1,158,510
1879....	3,870,411,590	629,015,655	7,456,870	1,215,360
1880....	4,490,454,297	620,042,707	8,470,000	1,013,130
1881....	4,855,501,612	365,047,315	9,401,520	931,520
1882....	5,362,500,765	506,499,153	9,216,450	DECREASE. 185,070
1883....	5,397,876,086	35,875,321 DECREASE.	8,789,300	427,150
1884....	5,351,549,821	46,326,265	8,804,500	INCREASE. 15,200

This indicates a decrease in gallons pumped, yet an increase in the consumption of coal. This was caused by Engine No. 3 being out of service for 115 days of the year.

The total duty of the three engines for the year, however, was 80,443,436 foot pounds per 100 pounds of coal.

The pier was damaged but very little, needing only some \$835.00 worth of repairs.

All machinery is in good working order, and no repairs of any kind are required.

HIGH SERVICE (WEST SIDE) PUMPING STATION.

The following table will show the amount of water pumped and of coal consumed since the introduction of this branch station:

YEAR.	TOTAL GALLONS PUMPED.	DAILY AVERAGE.	TOTAL POUNDS OF COAL CONSUMED.
Last ½ 1878.....	24,925,983	134,011	109,645
1879.....	62,200,870	174,232	207,290
1880.....	108,982,237	297,765	320,930
1881.....	171,749,723	477,082	415,630
1882.....	231,546,137	634,373	450,875
1883.....	293,609,156	804,408	510,850
1884.....	327,227,462	894,064	512 740

Early in the year a new independent 12-inch supply main was laid from the 30-inch main on Fourth street to the pumping station, at a cost of \$11,518.63.

On the 2d day of May, 1884, a contract was entered into with Edw. P. Allis for a new 3,000,000 gallon pump for the sum of \$9,750.00. The contract for the foundation for this pump was let to Mr. G. F. Stuewe for \$2,600.00 and was completed on the 30th day of August. E. P. Allis began the delivery of the pump machinery on September 2d following, and completed the delivery and erection in 18 days. The new pump was put into service on the 21st day of September, since which time it has been running with but very short intermissions. The high service district was increased to Walnut street

on the north, west of Twelfth street. The daily average pumped since this date has been 1,705,556 gallons.

No official duty test of the new pumping engine has yet been made. The pump is working well and is noiseless under its constantly varying load.

The main entrance to the engine building has been changed so as to afford more room in the interior. Steam heating has also been introduced into the building.

The Cope & Maxwell pump has been entirely out of service since the running of the new pump, but is kept in reserve.

RESERVOIR.

As in the preceding year when all the pumps had been put in the best of order, the water was drawn off from the reservoir and the same again cleaned. About one inch of clay deposit had collected upon the bottom during the year. This was removed and the bottom absolutely freed from all foreign substances. The concrete of the bottom was found in places to be but 2 inches in thickness and largely in a rotten condition, permitting the water to soak away in a number of places. Parts of the concrete were removed and a new layer placed over the entire bottom, varying in thickness from $2\frac{1}{2}$ to 5 and 6 inches. All material was carted to the top of the bank and from there run into the concrete mixer, which was run by steam. There were used for this purpose 704 cubic yards of crushed stone, 850 yards of clean sand and fine gravel, and 354 cubic yards of special burn Milwaukee cement. The concrete was distributed by from 8 to 10 men in wheel-barrows as fast as it could be carted from the mixer, spread so as to make a uniform sloping surface and most thoroughly tamped. The mixing of the concrete began on the 9th day of September and it took 25 days to complete the work, making 1,127 cubic yards of concrete at a total cost including the material, of \$6,280.71 or of \$5.56 per cubic yard. The total cost of the work including cleaning, repointing of sidewalls, etc., was \$7,880.77 and was done by the city. Water was again let into the reservoir on October 19th.

During the time of making these repairs water was supplied to the west and partly to the south division through the 24 inch pipe running through and along

the bottom of the reservoir. This pipe has been known to leak within the reservoir bank for a number of years and this leak has gradually increased. At different times efforts have been made to get at it but it was found to be too dangerous to the bank to proceed. Why the pipe was placed where it is I have been unable to ascertain. To avoid danger I would recommend that at an early date a 30-inch main be laid around the reservoir and connected with the 30-inch main on each side of the same, and that the 24-inch main be placed out of service.

MAINS.

An unusual large amount of water pipes were laid during the year, viz., 32,945 feet of 6-inch, 10,882 feet of 8-inch, and 6,478 feet of 12-inch, making now a total of $110\frac{918}{1000}$ miles laid in the city.

The 6-inch main on Broadway, from Wisconsin to Mason streets, was taken up by the department and replaced with a 12-inch main. The actual work of replacing the 6 with a 12-inch pipe, and of disconnecting and of reconnecting all branch and service pipes occupied but sixteen hours.

In July the Common Council directed the placing of 85 new double steamer hydrants, and of changing 20 single to double nozzled hydrants in various parts of the city. After receiving the hydrants from Messrs. R. D. Wood & Co. about October 1, the department force placed 60 of the hydrants as ordered. The balance will be placed as early as possible in Spring. There are now 920 city fire hydrants connected with the water mains, which are maintained by the water department, and for which this department has as yet received not one cent of revenue or credit.

I again wish to call your attention to the fact that the West Division is almost entirely supplied through the 30-inch main on North avenue, crossing the river on North avenue bridge. Should anything happen to this main which is very accessible under the bridge, or to the bridge itself, which is a comparative light structure, the entire West Side and the reservoir would be cut off from a supply of water.

The increasing consumption of water in the business section and at the high service pumping station is also decreasing the pressure in the high dis-

tricts in the north end of the West Side. All this makes it very necessary to lay an additional large pipe from the pump works along *under* the river to the Fourth street main on the West Side as an additional feeder, and to supply the West Division in case of an accident to the North avenue main.

WATER WASTE.

Although the total consumption in 1884 was less than in 1882 or 1883, notwithstanding the large increase of actual consumers during these years, yet so long as the average consumption is 100 to 110 gallons per capita per day for the total number of inhabitants, the question of checking the waste of water demands full consideration. Additional authority to a limited extent having been granted last spring, meters were continued to be placed where it was thought they would do the most good. I believe our citizens are now generally awakening to the necessity and justice of metering the water supplied to consumers, especially to the large and careless consumers. A number of citizens having discovered the advantage of a careful use of water through meters, have had such placed at their service pipes and are paying less than formerly at the usual rating. As this fact becomes more known, it will aid in checking waste and in attaching meters. Of the total consumption about 15 per cent was so measured which furnished a revenue of \$67,151.05 against \$138,246.24 for the balance (85%) of the water supplied.

I hope that necessary legislation will be obtained to enable the city to place meters wherever necessary at the expense of the consumer.

BRIDGES.

The iron draw bridge across the Milwaukee river at the foot of Oneida street, the contracts for which were let in October, 1883, was completed on March 19th, and again opened to public travel. The clear channel opening on each side of the draw is 62 feet. The total cost of the bridge was \$40,546.00.

The Chicago, Milwaukee & St. Paul Railway Company completed the viaduct over their tracks on Sixth street about the 1st day of February, 1884, the

City placing the timber joists and planking the roadway and sidewalk according to contract with the said company.

Funds having been provided for the reconstruction of the Sixth street draw bridge connecting with above viaduct, contracts were let for the substructure, consisting of stone piers, center pier and abutment for the iron draw and 140 feet of iron viaduct approach from the south, to Mr. C. H. Starke for the sum of \$27,750 00.

The contract for the superstructure of the above improvement was awarded to the Detroit Bridge and Iron Works for the sum of \$16,000.00. The entire work, including the improvement of 160 feet of roadway approach was completed within the time specified, at a total cost of \$44,854.00, and was again opened to public travel after some seven months' interruption. This improvement is one of the most substantial in the City, but cannot be called complete, for the reason that the north approach of the iron viaduct was of necessity constructed upon a grade too steep for the best public convenience. The viaduct should be continued on a level grade over Fowler street to an intersection of the grade beyond. As soon as the proper steps have been taken for this improvement, that part of the viaduct on the grade can be easily raised, as it was constructed with a view to such change.

During the coming year at least two of the old wooden bridges will have to be replaced by iron structures. With this view a strip of land on the northerly side of Kinnickinnic river has been condemned for public use, so that a longer bridge, giving a greater channel opening, can be constructed across said river on Kinnickinnic avenue as soon as funds are provided.

SPECIAL SEWERS.

Under authority given by the Common Council on December 10, 1883, this work was pushed as rapidly as possible. On January 31 a contract was entered into with Mr. C. H. Starke for the construction of section No. 1 of this sewer, consisting of a seven feet in diameter iron and brick shaft on each side of Milwaukee river, a 50-inch in diameter iron syphon pipe under said river

connecting the two shafts, and of two short connections upon a higher level with the same shafts.

The iron shafts 9 feet in diameter were made of $\frac{1}{4}$ inch boiler iron plates riveted together, the whole resting on piles cut off 24 feet below water line on the West Side, and 32 feet below on the East Side. The shafts were afterwards lined with a 12-inch ring of brick and concrete. Near the bottom each shaft had a 50-inch opening, with which the syphon pipe was subsequently connected. After the proper channel had been dredged the pipe consisting of $\frac{3}{8}$ -inch boiler iron was lowered in lengths of about 170 feet, and connected with the shafts and each other by a bell and spigot joint, drawn together by U shaped screw bolts.

The bell and spigots had previously been leaded and fitted, and when the work was completed there was absolutely no leak found in any part of the pipe or shafts.

All the labor of setting the shafts, lowering bedding and anchoring the pipe, of making the joints, and the doing of all submarine work was performed by and under the direction of Messrs. Breyman and Thatcher, of Toledo, the former personally doing all the submarine work, the perfection of the same testifying to his skill and ability as a submarine engineer.

The contract was completed in October and cost the sum of \$35,000.00.

On August 8th bids were received for a pumping engine and a battery of four boilers, the pump to lift and deliver 7,000 cubic feet of water 18 feet per minute. The contract was awarded to E. P. Allis for the sum of \$29,500.00. Work on this contract is progressing satisfactorily, and it is hoped that everything will be in running order early in Spring.

On October 17th and 27th bids were received for constructing the necessary engine foundation, gateway, pumpwell, conduit and weir, but both times were considered too high.

The Common Council then authorized the construction of this work without a formal contract. Work was commenced by the city on November 18th, and proceeded very favorably until December 16th since which time the extreme

cold and inclement weather has interfered. The work is located upon a narrow neck of land between Lake Michigan on the east and the Milwaukee river on the west. This strip is about 220 feet wide and consists entirely of sand and gravel, making the construction of the wells and foundations quite difficult. It is hoped, however, that the provisions made will be sufficient to cope with every difficulty and that the city will be the gainer by undertaking this work itself.

As soon as the foundations are completed, contracts for proper buildings for the machinery, etc., will be let, to be completed early in the season.

On December 2d a contract was let for constructing a part of section four of the special sewer, consisting of 1,950 feet of 5 feet 4 inch in diameter sewer under Grove and Park street, to connect with the finished section. The grade of this part of the sewer is some 34 feet below the street and will be tunneled. Work was commenced and is progressing at the rate of 15 feet a day.

The work on section No. 2, which has been in an uncompleted state for the past several years, is now being finished by the contractor and his sureties and will be ready for use before spring.

SEWERS.

There were laid during the year 10,208 feet of brick sewer and 29,265 feet of pipe sewer, making a total of 39,473 feet or $7\frac{475}{1000}$ miles of sewer at a cost \$98,246.63.

There are now laid and in use $118\frac{23}{100}$ miles of sewers in the city which have cost the sum of \$1,386,611.06.

For further information as to location, sizes, etc., of sewers built in 1884, I would refer you to the reports of the Assistant Engineers.

The Washington Ave. sewer was extended some 655 feet reaching to and 100 feet into Walnut street. This section was constructed by Mr. D. W. Purtell at a cost of \$9,459.50.

With the slow progress, this work has made the last few years on account of the lack of more funds, it will be some four or five years before much benefit can be derived from this much needed sewer.

It would be very desirous to have some special legislation authorizing the levy of a special tax for this and other large sewers in this district.

The same may be said for the south sewerage district, where several large sewers are very badly needed to drain territories already thickly settled.

Before closing, I wish to express to your Honorable Board my thanks for the official courtesy always shown toward this department, and also my thanks to all my assistants for their attention to the work in hand.

Respectfully submitted,

G. H. BENZENBERG,

City Engineer.

REPORT
OF
STREET IMPROVEMENTS
IN THE
EAST DIVISION AND WEST DIVISION A
FOR THE YEAR
1884.

REPORT OF STREET IMPROVEMENTS IN THE EAST DIVISION.

During the year 1884 the following street and alley improvements have been completed in the First Ward:

STREET.	FROM	TO
Irving Place	Prospect ave	Cambridge ave.
Lyon	Jefferson	Cass.
Hamilton	Astor	North Water.
Maryland	Prospect ave	Greenwich.
Prospect ave	North ave.	Maryland.
Warren ave	North Water	North line of subdivision.
Farwell ave	Franklin	Brady.
Knapp	Astor	Marshall.
Van Buren	Knapp	Brady.
Murray ave	Bradford	Bellevue Place.
Frederick	Bradford	Bellevue Place.
Summit Place	Oakland ave	Frederick.
Bellevue Place	Oakland ave	Frederick.
N. and S. alley, block B	Brady	Pleasant.
N. and S. alley, block 195	Kewaunee	Brady.
N. and S. alley, $\frac{1}{4}$ blocks 53-54-55-56	Pleasant	Kewaunee.

Making a total of improved streets and alleys of 13,557 lineal feet, which required:

47,159 cubic yards of excavation	} at a cost of	\$10,292 80
4,305 cubic yards of filling		
11,249 cubic yards of gravel, at a cost of		8,999 20
11,932 square yards of gutter paving, at a cost of		5,369 40
10,265 square yards of sodding, at a cost of		924 48
2,348 square yards of alley paving, at a cost of		1,174 00
10,765 lineal feet of sidewalk planking, at a cost of		2,906 55
10,330 lineal feet of stone curb, at a cost of		7,714 50
6,692 lineal feet of wood curb, at a cost of		535 36

STREET IMPROVEMENT.

During the year 1884 the following street improvements have been completed in the Third ward.

STREET.	FROM	TO
Milwaukee.....	Wisconsin.....	Michigan.
East Water.....	Detroit	East Water Str. Bridge.
Buffalo	East Water.....	Broadway.

Making a total length of improved streets of 2,017 lineal feet which required:

2,412 square yards of cedar block pavement, at a cost of.....	\$2,672 65
8,079 square yards of granite pavement, at a cost of.....	18,096 96

STREET IMPROVEMENTS.

During the year 1884 the following street improvements have been completed in the Seventh Ward:

STREET.	FROM.	TO.
Van Buren.....	Division	Biddle.
Milwaukee.....	Division	Biddle.
Jefferson.....	Oneida	Mason.

Making a total length of improved streets of 2,744 lineal feet, which required:

1,605 cubic yards of excavation.....	} at a cost of.....	\$10,700 00
1,565 square yards of gutter paving.....		
765 cubic yards of lake gravel.....		
2,653 cubic yards of broken stone...		
297 cubic yards of filling, at a cost of		59 40
200 cubic yards of gravel, at a cost of		160 00
397 square yards of gutter paving, at a cost of		99 25
839 lineal feet of stone curbing, at a cost of		545 35

STREET AND ALLEY IMPROVEMENTS.

WEST DIVISION A.

During the year 1884 the following street and alley improvements have been completed in the Fourth Ward:

STREET.	FROM	TO
Twentieth	Wells	Cedar.
Fowler	Second	Fourth.
Fowler	Fifteenth	Twentieth.
Fourth	Alley, Block 83	Fowler.
Clybourn	Eighteenth	Twentieth.
Twenty-eight	Sycamore	Clybourn.
Grand Avenue	Fifteenth	Twenty-first.
Sixth	Grand Avenue	Clybourn.
Seventh	Hinman	A pt. 160 ft. W. of Hin.
First Avenue	East Street	A pt. 160 ft. S. of East st.
N & S Alley, Block 210	Wells	E & W Alley.
E & W Alley, Block 210	Fourteenth	N & S Alley.
N & S Alley, Block 5	Sycamore	Clybourn
N & S Alley, Block 67	Grand Avenue	Sycamore

Making a total length of streets and alleys improved of 8,617 lineal feet, which required:

5,601 cubic yards of excavation. }	At a cost of	\$3,333 90
11,067 cubic yards of filling }		
2,084 cubic yards of gravel, at a cost of		1,875 60
4,921 square yards gutter paving, at a cost of		
4,222 square yards sodding, at a cost of		422 20
4,868 lineal feet of sidewalk planking, at a cost of		1,314 38
3,600 lineal feet of stone curbing, at a cost of		2,340 00
3,490 lineal feet of stone curbing reset, at a cost of		418 80
4,203 square yards of granite pavement, at a cost of		10,340 38
13,717 square yards of cedar block pavement, at a cost of		10,890 53
2,315 square yards of alley pavement, at a cost of		1,157 50

STREET AND ALLEY IMPROVEMENTS.

EAST DIVISION.

During the year 1884 estimates were prepared for improving the following streets and alleys in the First Ward:

STREET	FROM	To
Lyon	Cass.....	Webster Place.
Ivanhoe Place.....	Farwell Avenue	Terrace Avenue.
Maryland.....	Greenwich.....	Bradford.
Cramer.....	North Avenue	Park Place.
Greenwich.....	Oakland Avenue.....	Maryland.
N. and S. Alley, Block 153	Division.....	Knapp.
N. and S. Alley, Block 236.....	Royal Place	Dane Place.

Making a total length of streets and alleys to be improved of 7,293 lineal feet, which will require:

23,050 cubic feet of cutting.
 18,129 " " " filling.
 5,366 " " " gravel.
 5,805 square yards of gutter paving.
 1,412 " " " alley paving.
 3,267 " " " sodding.
 1,984 lineal feet of stone curb.
 4,207 " " " wood curb.
 7,840 " " " sidewalk planking.

STREET IMPROVEMENTS

During the year 1884 estimates were prepared for improving the following street in the Seventh Ward:

STREET.	FROM.	TO.
Mason	Jackson	Juneau Place.

Making a total length of street to be improved of 948 lineal feet, which will require:

1,844 cubic yards of cutting.
 368 cubic yards of filling.
 977 cubic yards of gravel.
 978 square yards of gutter paving.
 3,753 square yards of sodding.
 1,820 lineal feet of stone curb.
 2,001 lineal feet of sidewalk planking.

STREET AND ALLEY IMPROVEMENTS.

WEST DIVISION A.

During the year 1884 estimates were prepared for improving the following streets and alleys in the Fourth Ward:

STREET.	FROM	TO
East.....	First Avenue.....	Menomonee River.
Clybourn	Twenty-fifth	Washington ave.
Twenty-fifth.....	Sycamore	Clybourn.
Muskego Avenue.....	Canal.....	North Canal.
Alley, block 136.....	Seventh	Eighth.
E. and W. alley, block 67.....	Fifth.....	Sixth.

Making a total length of streets and alleys to be improved of 3,468 lineal feet, which will require:

16,070 cubic yards of cutting.
 15,877 cubic yards of filling
 3,219 cubic yards of gravel.
 785 cubic yards of broken stone.
 3,744 square yards of gutter paving.
 1,205 square yards of alley paving.
 5,227 lineal feet of sidewalk planking.

RECAPITULATION

Of work completed and estimated in the East Division and West Division A.

The total length of streets and alleys improved during the year 1884 was 26,955 lineal feet, or $5\frac{105}{1000}$ miles, divided as follows:

East Division	3.473 miles
West Division A.....	1.632 miles

Which required:

52,760 cubic yards of excavation, at a cost of.....	\$10,552 00
15 669 cubic yards of embankment, at a cost of	3,133 80
13,533 cubic yards of gravel, at a cost of.....	11,034 80
16,128 square yards of cedar block pavement, at a cost of.....	13,563 18
12,282 square yards granite pavement, at a cost of.....	28,437 34
4,663 square yards of alley pavement, at a cost of.....	2,331 50
17,250 square yards of gutter pavement, at a cost of	7,683 10
14,494 square yards of sodding, at a cost of.....	1,346 68
10,026 square yards of broken stone and gravel road, at a cost of.....	10,700 00
14,769 lineal feet of stone curb, at a cost of....	10,599 85
3,490 lineal feet of stone curb reset, at a cost of.....	418 80
6,692 lineal feet of wood curb, at a cost of.....	535 36
15,633 lineal feet of sidewalk planking, at a cost of.....	4,220 93
Total cost.....	<u>\$104,557 34</u>

RECAPITULATION

Of work estimated but not completed in the East Division and West Division A.

The total length of streets and alleys for which estimates were prepared in the year 1884 is 11,700 lineal feet, or $2\frac{217}{1000}$ miles, divided as follows:

East Division.....	1.566 miles.
West Division A.....	.651 "

Which require:

40,964 cubic yards of cutting.
34,374 " " " filling.
9,562 " " " gravel.
785 " " " broken stone.
10,527 square yards of gutter paving.
2,617 " " " alley paving.
7,020 " " " sodding.
3,804 lineal feet of stone curb.
4,207 " " " wood curb.
15,068 " " " sidewalk planking.

STREET PAVEMENTS.

During the year 1884 the following streets were paved with *Granite Blocks*:

East Water Street, from Detroit to East Water Street Bridge.
Buffalo Street, from East Water to Broadway.
Fowler Street, from Second to Fourth.

With Cedar Blocks:

Milwaukee Street, from Wisconsin Street to Michigan Street.
Fourth Street, from Alley, Block 83 to Fowler street.
Grand Avenue, from Fifteenth Street to Twenty-first Street.

Making a total length of 5,122 lineal feet.

East Water Street, Buffalo Street and Grand Avenue had been paved before with pine blocks, a length of 3,677 feet, leaving a length of 440 lineal feet added to the paved streets of the East Division, and a length of 1,005 feet added to the paved streets of the West Division A.

REPAVING AND REPAIRING.

The following is the amount of repaving done by the different Ward foremen in their wards:

Ward.	Square yards of new cedar block pavement.	Square yards of stone gutters and alleys relaid.
First .....	.....	520
Third	6,702	3,300
Fourth	3,725	232
Seventh	7,642	359

Respectfully submitted,

CHARLES J. POETSCH,

Ass't City Engineer.

To GEO. H. BENZENBERG, Esq.,

City Engineer.

and cost of same.

EXISTING PIPE SEWERS. DIMENSIONS.		TOTAL LENGTH OF SEWERS.		CO C
15	12	BRICK.	PIPE.	PROP
97	496	.....	593	\$58
.....	.....	.....	390	32
55	1,020	.....	1,075	7
215	.....	1,076	215	1,2
.....	160	.....	160	1
56	251	.....	307	2
55	.....	.....	321	2
.....	180	.....	180	.....
60	.....	440	60	.....
.....	.....	.....	366	.....
107	.....	.....	1,373	1,
645	2,107	1,516	5,040	\$6,

5,040 6,556
feet or 1. $\frac{241}{1000}$ miles.

WEST SEWERAGE DISTRICT—A.

Statement showing the number of lineal feet of Sewers built during the year 1884, and cost of same.

DATE OF CONTRACT. 1884.	NAME OF		LOCATION OF SEWERS.			MANHOLES.	BRICK SEWERS. DIMENSIONS.		CEMENT PIPE SEWERS. DIMENSIONS.			TOTAL LENGTH OF SEWERS.		COST OF SEWERS CHARGEABLE TO		COST OF INSPECTION.	TOTAL COST OF SEWERS.
	CONTRACTOR.	INSPECTOR.	STREET.	FROM	TO		36	30	18	15	12	BRICK.	PIPE.	PROPERTY.	FUND.		
April 9	H. Colclough	James Kirkham	Fowler	Fifteenth	Sixteenth	4			343				343	\$308 07	\$35 50	\$21 00	\$364 50
May 8	Thos. Lee	E. F. Herzberg	Twentieth	Clybourn	Grand ave	8				411	411		822	1,068 23	172 99	45 00	1,286 22
May 8	D. W. Purcell	B. H. Reynolds	Queen Ann Place	Wells	Cedar	5				52	405		457	315 40	351 82	24 50	691 72
May 24	Dan'l O'Driscoll	B. H. Reynolds	Twenty-ninth	Clybourn	Sycamore	4				395			395	560 90		24 00	584 90
May 24	Thos. Lee	James Kirkham	Fowler	Sixteenth	Eighteenth	8		31	590			31	590	754 15		15 00	769 15
		Total				29		31	933	858	816	31	2,607	\$3,006 68	\$560 31	\$129 50	\$3,696 49

31 2,607 2,638 \$3,696 49
2,638 lineal feet or 0.4998 miles.

84, and cost of same.

CEMENT PIPE SEWERS.			TOTAL LENGTH	
DIMENSIONS.			OF SEWERS.	
18	15	12	BRICK.	PIPE.
A 343	.....	.....	.....	343
M	411	411	.....	822
M	52	405	.....	457
M	395	.....	.....	395
M 590	.....	.....	31	590
933	858	816	31	2,607

2,607

2,638

equal feet

or $0. \frac{4996}{10000}$ miles

EAST SEWERAGE DISTRICT.

Statement showing the number of lineal feet of Sewers built during the year 1884, and cost of same.

DATE OF CONTRACT. 1884.	NAME OF		LOCATION OF SEWERS.			MANHOLES.	BRICK SEWERS.		CEMENT PIPE SEWERS.		TOTAL LENGTH		COST OF SEWERS		COST OF	TOTAL COST	
							DIMENSIONS.		DIMENSIONS.		OF SEWERS.		CHARGEABLE TO				INSPECTION.
							36	30	18	15	12	BRICK.	PIPE.	PROPERTY.				FUND.
CONTRACTOR.	INSPECTOR.	STREET.	FROM	TO		36	30	18	15	12	BRICK.	PIPE.	PROPERTY.	FUND.		SEWERS.	
May 3.....	J. C. F. Brand.....	Mich. Ryan.....	Arlington Place.....	Brady.....	Warren ave.....	6				97	496		593	\$581 87	129 73	\$42 00	\$753 60
May 23.....	Thos. Lee.....	E. F. Herzberg.....	Detroit.....	Van Buren.....	Beach.....	4			39 1/2			390	326 25	122 25	9 00	457 50	
June 14.....	Thos. Lee.....	James Kirkham.....	Jefferson.....	Michigan.....	Huron.....	12				55	1,020		1,075	787 96	158 04	49 50	995 50
		and.....	Jackson.....	Huron.....	Detroit.....													Buffalo.....
June 26.....	Pat. Drew.....	Jos. Dunn.....	North Water.....	Brady.....	Pearson.....	12	58	1,018		215		1,076	215	1,226 93	3,807 97	147 00	5,181 90
		Mich. Ryan.....	Pearson.....	North Water.....	Marshall.....												
June 28.....	J. C. F. Brand.....	Mich. Ryan.....	Division.....	Prospect ave.....	Lake.....	1					160		160	157 99	74 01	15 00	247 00
July 29.....	J. C. F. Brand.....	Mich. Ryan.....	Pleasant.....	Racine.....	Franklin.....	4				56	251		307	298 33	88 49	63 00	449 82
Sept 12.....	Thos. Lee.....	Mich. Ryan.....	Marshall.....	Pearson.....	Hamilton.....	4			266	55			321	229 33	300 32	54 00	583 65
Oct. 17.....	John C. Murray.....	Mich. Ryan.....	Marshall.....	Pearson.....	Brady.....	2					180		180	167 90	80 50	21 00	269 40
Oct. 17.....	J. C. F. Brand.....	Jos. Dunn.....	Murray ave.....	Thomas.....	Greenwich.....	4		44 0		60		44 0	60	592 00	993 00	42 00	1,627 00
Oct. 17.....	John C. Murray.....	Mich. Ryan.....	Terrace ave.....	Woodstock Place.....	Kenilworth Place.....	3			366				366	516 15	51 15	27 00	594 30
Oct. 28.....	Thos. Lee.....	Jos. Dunn.....	Murray ave.....	Greenwich.....	Bellevue Place.....	14			1,266	107			1,373	1,744 00	562 64	54 00	2,360 64
Total.....						66	58	1,458	2,288	645	2,107	1,516	5,040	\$6,628 71	\$6,368 10	\$523 50	\$13,520 31
							1,516				5,040		6,556	\$13,520 31			
						6,556 lineal feet						or 1.241 miles.					

93-98

REPORT
OF
STREET IMPROVEMENTS
IN THE
WEST DIVISION—B.



STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1884 the following street improvements have been completed:

SECOND WARD.

STREET.	FROM	TO
Vliet.....	Twelfth.....	Twentieth.
Fifth.....	Poplar.....	Vliet.
Twenty-fourth.....	Chestnut.....	Vliet.
South $\frac{1}{2}$ Alley, Block 38.....	S. line Alley, running E. & W.	Chestnut
Alley, Block 18.....	East and West.....	Cedar.

Making a total length of improved streets and alleys of 4,866 lineal feet, which required:

Cubic yards of excavation	15,884
Cubic yards of filling	222
Cubic yards of gravel.....	
Square yards of gutter paving	1,113
Lineal feet of sidewalk planking	3,091

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1884 the following street improvements have been completed:

SIXTH WARD.

STREET.	FROM	To
Harmon	Buffam	Holton. .
Galena	Third	Fourth.
Alley, Block 5	Lloyd	Garfield Avenue.
Alley, Block 39	Sherman	Reservoir Avenue.
Alley, Block 10	Lloyd	Garfield Avenue.

Making a total length of improved streets and alleys of 2,067 feet, which required:

Cubic yards of excavation	4,248
Cubic yards of filling	247
Cubic yards of gravel	421
Square yards of gutter paving	3,087 4-9
Lineal feet of sidewalk planking	694
Square yards of sodding	1,235 1/3

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1884 the following street improvements have been completed:

NINTH WARD.

STREET.	FROM	TO
Vliet.....	Twelfth.....	Twentieth.
Twenty-fourth	Vliet.....	Walnut.
South Alley, Block 14	Eighteenth.....	Nineteenth.
S. W. Alley, Block 113	Vliet.....	Mill.

Making a total length of improved streets and alleys of 3,701 lineal feet, which required:

Cubic yards of excavation.....	4,461
Cubic yards of filling.....	
Cubic yards of gravel.....	1,433
Square yards of gutter paving.....	2,682½
Lineal feet of sidewalk planking.....	4,926.78

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1884 the following street and alley improvements have been completed:

TENTH WARD.

STREET.	FROM	TO
Twelfth.....	Walnut	Garfield Avenue.
Twelfth.....	Lee.....	Centre.
Eighth.....	Centre.....	Locust.
Louis Avenue.....	North Avenue.....	Lee.
Louis Avenue.....	Lee.....	Centre.
Alley in Block 3.....	Sherman.....	Wine.
E Alley in Block L.....	Lee.....	Wright.
Alley in Block 214.....	Harmon.....	Lloyd.

Making a total length of improved streets and alleys of 9,183 lineal feet, which required:

Cubic yards of excavation.....	4,346
Cubic yards of filling.....	1,273
Cubic yards of gravel.....	4,513 $\frac{2}{3}$
Square yards of gutter paving.....	9,601 $\frac{2}{3}$
Lineal feet of sidewalk planking.....	13,976

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1884 the following street and alley improvements have been completed:

THIRTEENTH WARD.

STREET.	FROM.	TO.
Third.....	Lee.....	Centre.
Sixth.....	Centre.....	N. line Field's Subdivis'n
Wall.....	North Avenue.....	Wright.
Clarke.....	Second.....	Third.
Second.....	Wright.....	Centre.
Alley, Block 206.....	North Avenue.....	Lee.

Making a total length of improved streets and alleys of 7241 lineal feet, which required :

Cubic yards of excavation	15,817
Cubic yards of filling	393
Cubic yards of gravel	2,942
Square yards of gutter paving	4,395 8-9
Lineal feet of sidewalk planking.....	

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1884 estimates were prepared for improving the following streets and alleys:

SECOND WARD.

STREET.	FROM	TO
Twenty-fifth	Cedar	State.
S. Alley, block 4	Nineteenth	Twentieth
S. Alley, Block 19	Eighteenth	Nineteenth.
Alley, Block 206	State	Prairie.

Making a total length of streets and alleys to be improved of 1,481 lineal feet, which requires:

Cubic yards of excavation	2,247
Cubic yards of filling	15
Cubic yards of gravel	538 $\frac{2}{3}$
Square yards of gutter paving	2,192 1-9
Lineal feet of sidewalk planking	1,029-5

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1884 estimates were prepared for improving the following streets and alleys:

SIXTH WARD.

STREET.	FROM	TO
First.....	Walnut.....	Sherman.
Alley, Blocks 6 and 42.....	Walnut.....	Sherman.
Alley, Blocks 3 and 45.....	Walnut.....	Sherman.
Alley, Block 13.....	Lloyd.....	Garfield Avenue.

Making a total length of streets and alleys to be improved of 1,637 lineal feet, which requiret:

Cubic yards of excavation	1,544
Cubic yards of filling.....	9,050
Cubic yards of gravel	153
Square yards of gutter paving	2,024
Lineal feet of sidewalk planking	250
Square yards of sodding	1 395 5-9

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1884 estimates were prepared for improving the following streets:

NINTH WARD.

STREET.	FROM	TO
Cherry	Twenty-first	Randell.
Cherry	Twentieth	Twenty-first.

Making a total length of streets to be improved of 1,734 feet, which requires:

Cubic yards of excavation.....	5,107
Cubic yards of filling	1,143
Cubic yards of gravel	432
Square yards of gutter paving.....	472
Lineal feet of sidewalk planking	588

STREET IMPROVEMENTS.

WEST DIVISION B.

During the year 1884 estimates were prepared for improving the following street:

THIRTEENTH WARD.

STREET.	FROM.	TO.
North Pierce.....	Wright.....	Centre
Clarke.....	Buffum.....	Humboldt.

Making a total length of streets to be improved of 3,168 lineal feet, which requires:

Cubic yards of excavation.....	9,061
Cubic yards of filling.....	257
Cubic yards of gravel.....	3,194
Square yards of gutter paving	3,717
Lineal feet of sidewalk planking	5,143

STREET IMPROVEMENTS

During the year 1884, in West Division—B.

WARD.	Square Yards of Cedar Block Pavement.	Lineal feet of Stone Curbing.	Lineal feet of Wood Curbing.
Second.	6,988	2,702.30	.....
Second.	1,899 8-9	920	.....
Sixth.	1,294	715	.....
Ninth.	6,828 1-9	2,652.70	.....
Tenth.			4,463
Thirteenth.	11,507		3,922

The above new cedar block pavement was laid as follows:

Second Ward, South $\frac{1}{2}$ of Vliet street, from Twelfth street to Twentieth street.

Second Ward, Fifth street, from Poplar street to Vliet street.

Sixth Ward, Galena street, from Third street to Fourth street.

Ninth Ward, North $\frac{1}{2}$ of Vliet street, from Twelfth street to Twentieth street.

Tenth Ward, Twelfth street, from Walnut street to Garfield avenue.

Thirteenth Ward, Third street, from Lee street to Centre street.

RECAPITULATION

Of work estimated in the West Division B.

The total length of streets and alleys for which estimates were prepared in the year 1884, is 8,020 lineal feet or $1\frac{518}{1000}$ miles, which requires:

Cubic yards of excavation.....	17,959
Cubic yards of filling	10,465
Cubic yards of gravel.....	4,317 $\frac{2}{3}$
Square yards of paving.....	8,405 1-9
Lineal feet of sidewalk planking.....	7,010.50
Square yards of sodding.....	4,395 5-9

RECAPITULATION

Of work completed in the West Division—B.

Total length of streets and alleys improved during the year 1884 was 27,048 lineal feet, or $5.\frac{124}{1000}$ miles, which required:

44,756 cubic yards of excavation, at a cost of.....	\$8,951 20
2,136 cubic yards of filling, at a cost of.....	427 20
9,309 $\frac{2}{3}$ cubic yards of gravel, at a cost of.....	8,844 16
20,880 $\frac{1}{2}$ square yards of paving, at a cost of.....	9,396 30
22,687 78-100 lineal feet of sidewalk planking, at a cost of.....	5,671 94
28,517 square yards of cedar block pavement, at a cost of.....	26,235 64
6,990 lineal feet of stone curbing, at a cost of.....	3,704 70
8,385 lineal feet of wood curbing, at a cost of.....	1,173 90
1,235 $\frac{1}{2}$ square yards sodding, at a cost of.....	148 24
<hr/>	
Total cost.....	\$64,553 28

PROFILES

Have been made for establishing grade on the following streets and alleys during the year 1884:

STREET.	FROM	To	WARD.	LINEAL FT. OF STRETS.
Twentieth	North Avenue....	Centre	Tenth	2,640
Elm	Twenty-third....	Twenty-seventh ..	Ninth	1,675
Lloyd	Twenty-third....	Twenty-seventh ..	Ninth	1,675
Twenty-fourth.....	Vine	North Avenue....	Ninth	2,031
Twenty-fifth.....	Lisbon Avenue ..	North Avenue....	Ninth	2,757
Randall.....	Lisbon Avenue ..	North Avenue....	Ninth	2,712
Twenty-sixth	Lisbon Avenue ..	North Avenue....	Ninth	2,604
Twenty-seventh	Lisbon Avenue ..	North Avenue....	Ninth	2,578
Lee	Twentieth.....	Fond du Lac Ave.	Tenth	964
Wright.....	Twentieth.....	Twenty-fourth....	Tenth	1,332
Clarke.....	Twentieth.....	Twenty-fourth....	Tenth	1,333
Hubbard	Lloyd	Walnut.....	Sixth	2,246
Harmon	Island Avenue....	E line Sherman'sA	Sixth	1,009
Alley, Block 40.....	North Avenue....	Lee	Thirteenth..	600
Total.....				26,155

Or $4\frac{953}{1000}$ miles.

Respectfully submitted,

NICOLAUS ENGEL,

Ass't City Engineer.

To GEO. H. BENZENBERG, Esq.,

City Engineer.

CONTINUED.

e year 1884, and cos

K SEWERS.			C
ENSIONS.			
42	36	30	
.....	58	.....	---
.....	1,302	39	---
.....	.....	57	---
.....	---
.....	---
.....	---
.....	---
.....	---
.....	---
57	.....	.....	---
.....	---
114	1,690	1,546	1,

5,359

19,732 line

WEST SEWERAGE DISTRICT—B—CONTINUED.

Statement showing the number of lineal feet of Sewers built during the year 1884, and cost of same.

DATE OF CONTRACT. 1884.	NAME OF		LOCATION OF SEWERS.			MANHOLES.	BRICK SEWERS. DIMENSIONS.					CEMENT PIPE SEWERS. DIMENSIONS.			TOTAL LENGTH OF SEWERS.		COST OF SEWERS CHARGEABLE TO		COST OF INSPECTION.	TOTAL COST OF SEWERS.
	CONTRACTOR.	INSPECTOR.	STREET.	FROM	TO		96	60	42	36	30	18	15	12	BRICK.	PIPE.	PROPERTY.	FUND		
July 25.....	Jas. Markey	By. Abert.....	Seventh.....	Hadley	Centre	5		688		58					746		\$859 29	\$3,392 91	\$133 00	\$4,385 20
July 29.....	Thos. Lee.....	E. F. Herzberg	Sixth.....	Clarke	Centre	6							269	307		576	859 04		34 00	803 04
July 29.....	Oscar Knie	B. H. Reynolds.....	Third.....	Centre	Locust	9				1,302	39				1,341		1,905 48	3,163 50	147 00	5,215 98
August 5.....	Dan'l O'Driscoll.....	E. G. Hayden.....	North ave.....	Island ave.....	Hubbard.....	3					57	256			57	256	318 73	241 54	38 00	598 27
August 13.....	Dan'l O'Driscoll	E. G. Hayden	Ninth.....	North ave.....	Wright.....	11							859	287		1,146	1,636 07	48 55	63 00	1,747 62
August 23.....	J. C. F. Brand	E. F. Herzberg	Kneeland.....	Fourteenth.....	Thirteenth.....	3							290			290	391 39	11	30 00	421 50
			Fourth.....	Chestnut.....	Poplar.....	5								395		395	392 69	77 36	23 00	493 05
			Booth.....	North ave.....	Garfield ave.....	3								333		333	416 25		36 00	452 25
September 19.....	John C. Murray.....	By. Abert.....	Second.....	North ave.....	Lee	6							287	288		575	603 72	03	63 00	666 75
October 4.....	Thos. Lee.....	E. F. Herzberg	Twenty-sixth.....	State	Wells	12						582	116	405		1,103	1,006 79	581 53	54 00	1,642 32
														275		275	215 24	136 76	27 00	379 00
October 17.....	Jac. Werner.....	Dav. Turner	Lloyd.....	Ninth.....	Tenth.....	1										275				
October 17.....	John C. Murray.....	By. Abert.....	Seventh.....	Hadley	Locust	4		666	57						723		905 66	2,933 47	98 00	3,937 13
October 17.....	John C. Murray.....	Mich. Ryan.....	Kneeland.....	Thirteenth.....	Summer	3							130	140		270	258 46	133 04	42 00	433 50
Total.....						187	655	1,354	114	1,690	1,546	1,672	4,380	8,321	5,359	14,373	\$21,537 01	\$28,310 71	\$1,750 00	\$51,597 72

5,359

14,373

19,732

\$51,597 72

127-132

19,732 lineal feet or 3 ⁷²⁷¹/₁₀₀₀₀ miles.

REPORT
OF
STREET IMPROVEMENTS
IN THE
SOUTH DIVISION,
FOR THE YEAR
1884.

REPORT OF STREET IMPROVEMENTS IN THE SOUTH DIVISION.

During the year 1884 the following street and alley improvements have been completed in the Fifth Ward:

STREET	FROM	TO
South Water.....	Reed	Ferry.
Reed	Lake	South Water
Reed	Park	Pierce.
Grove	Virginia	Mineral.
South Water.....	Oregon	National Avenue.
Lake st. extended bet. blk. 53 & 54	South Water.....	Dock line.
E. and W. Alley, Blocks 3 & 82	Clinton	Barclay.

Making a total length of improved streets and alleys of 5,621 lineal feet, which required:

73 cubic yards of excavation.....	} at a cost of	\$22 20
75 cubic yards of filling		
300 cubic yards of gravel, at a cost of.....		150 00
5,014 square yards of cedar block pavement, at a cost of.....		3,760 50
6,015 square yards granite pavement, at a cost of.....		13,533 75
944 square yards of alley paving, at a cost of.....		594 72
1,955 lineal feet of oak planking, at a cost of.....		2,443 75

Of the above amount of work done on streets, was to replace wood block pavement that had been worn out, except South Water street, from Oregon street to National avenue, which was planked with pine, was replaced with oak planking.

STREET IMPROVEMENT.

SOUTH DIVISION.

During the year 1884 the following street and alley improvements have been completed in the Eighth Ward:

STREET.	FROM.	TO.
Scott	Ninth ave.....	Eleventh Avenue.
Washington.....	Ninth Avenue.....	W line of Walker's Pt Ad
Mineral.....	Eleventh Avenue.....	W line of Walker's Pt Ad
Fifteenth ave.....	National Avenue.....	Railroad.
Nineteenth ave.....	National Avenue.....	Railroad.
Twenty-first ave	National Avenue.....	Railroad.
Alley, block 1	Seventh Avenue.....	W line lot 3, block 1
Alley, block 4	Fourth Avenue.....	Fifth Avenue.
Alley, block 13	Sixth Avenue.....	Seventh Avenue.
Alley, block 44	Fifth Avenue.....	Sixth Avenue.
Alley, block 176	Ninth ave.....	Tenth ave.
E. and W. and N. and S. alleys, block 173	Mineral	Washington.

Making a total length of streets and alleys improved of 10,383 lineal feet, which required:

21,003 cubic yards of cutting.....	} at a cost of.....	\$6,350 13
16,831 " " " filling.		
11,819 cubic yards of gravel, at a cost of.....		7,703 36
10,425 square yards of gutter paving, at a cost of.....		4,699 20
4,866 " " " alley paving, at a cost of		2,543 26
14,483 lineal feet of sidewalk planking, at a cost of		3,600 58

STREET IMPROVEMENTS.

SOUTH DIVISION.

During the year 1884 the following street and alley improvements have been completed in the Eleventh Ward:

STREET.	FROM	To
Lincoln Avenue.....	Windlake avenue	Forest Home avenue.
Rogers	Third avenue	E. line of House of Cor- rection property.
Burnham	Eighth avenue	Tenth avenue.
Orchard	Third avenue	Fourth avenue.
Cross	Eleventh avenue	Pearl
Seventh Avenue.....	Becher	N. line Harmeyer's subd.
E. and W. alley, block 10.....	Sixth avenue.....	Seventh avenue.
N. and S. " " 10.....	Maple	Burnham.
E. and W. " " 11.....	Fifth avenue....	Sixth avenue.
N. and S. " " 11.....	Maple	Burnham.
N. E. and W. alley, block 7.....	Sixth avenue....	Seventh avenue.
N. and S. alley, block 134.....	Orchard	Lapham.
N. and S. " " 137.....	Orchard	Lapham.
N. and S. " " 138.....	Orchard	Lapham.
N. and S. " " 140.....	Lapham	Mitchell.
S. E. and W. alley, block 144....	Second avenue.....	Third avenue.
N. E. and W. " " 144....	Second avenue.....	Third avenue.

Making a total length of streets and alleys improved of 7,779 lineal feet,
which required :

18,765 cubic yards of excavation, }	at a cost of	\$2,803 03
1,334 cubic yards of filling, }		
6,099 cubic yards of gravel, at a cost of.....		2,813 44
2,636 square yards of gutter paving, at a cost of.....		1,108 65
9,083 square yards of alley paving, at a cost of		4,848 11
4,086 lineal feet of sidewalk planking, at a cost of.....		1,008 35

STREET IMPROVEMENTS.

SOUTH DIVISION.

During the year 1884 the following street and alley improvements have been completed in the Twelfth Ward:

STREET.	FROM	To
Allis.....	South Bay St.....	Lincoln Avenue.
Garden.....	Becher St.....	200 ft. N of Becher St.
Reed.....	Maple St.....	S line of N E $\frac{1}{4}$ Sec. 5.
Clinton.....	Railroad St.....	Kinnickinnic Avenue.
Kinnickinnic Avenue.....	Clinton.....	Mitchell St.
Burnhan St.....	First Avenue.....	Greenbusch St.
E & W Alley, Block 138 & 148.	First Avenue.....	Grove St.

Making a total length of improved streets and alleys of 4,524 lineal feet, which required:

10,665 cubic yards of excavation.	} At a cost of.....	\$2,919 42
6,297 cubic yards of filling.....		
2,065 cubic yards of gravel, at a cost of.....		1,435 93
2,480 square yards gutter paving, at a cost of.....		1,069 61
745 square yards of alley paving, at a cost of.....		484 25
5,500 square yards of cedar block paving, at a cost of.....		3,300 00
3'567 lineal feet of sidewalk planking, at a cost of.....		870 50

Of the above amount, that on Clinton St. and Kinnickinnic Ave. was to replace wood block pavement that had been worn out with cedar block pavement.

STREET AND ALLEY IMPROVEMENTS.

SOUTH DIVISION.

During the year 1884 estimates were prepared for improving the following streets and alleys in the Fifth Ward:

STREET.	FROM.	TO.
South Water.....	Reed ..	W line of alley, block 4.

Making a total length of streets and alleys to be improved of 155 lineal feet, which will require:

Cubic yards of excavation.....	189
Square yards of granite pavement.....	775
Lineal feet of stone curbing	295

STREET AND ALLEY IMPROVEMENTS.

SOUTH DIVISION.

During the year 1884 estimates were prepared for improving the following streets and alleys in the Eighth Ward:

STREET.	FROM	To
Fifteenth ave	Railroad	National ave.
Washington	Ninth ave	W line of Walker's Pt ad
Mineral	Eleventh ave	W line of Walker's Pt ad
Walker	Seventh ave	Eleventh ave.
Scott	Ninth ave	Eleventh ave.
Twenty-first ave	Railroad	National ave.
Union ave	Ninth ave	W line of Walker's Pt ad
N & S and E & W alley, block 2	Walker	Mineral.
Alley, block 19	Third ave	Fourth ave
Alley, block 28	Seventh ave	W line of Walker's Pt ad

Making a total of streets and alleys to be improved of 9,147 lineal feet, which require:

Cubic yards of excavation	23,552
Cubic yards of filling	13,394
Cubic yards of gravel	11,417
Square yards of gutter paving	10,005
Square yards of alley paving	3,500
Lineal feet of sidewalk planking	13,918

STREET IMPROVEMENTS.

SOUTH DIVISION.

During the year 1884 estimates were prepared for improving the following streets and alleys in the Eleventh Ward:

STREET.	FROM	TO
Burnham St.....	Eighth Ave.....	Tenth Ave.
Mitchell St.....	First Ave.....	Seventh Ave.
Orchard St.....	Eighth Ave.....	Eleventh Ave.
Bismark Ave.....	Railroad St.....	Orchard St.
Bismark Ave.....	N line R R & B Subd.....	Lincoln Ave.
Grant St.....	W line R R & B Subd.....	Ninth Ave.
Rogers St.....	Fifth Ave.....	Tenth Ave.
N & S Alley, Block 2.....	Rogers St.....	Wind Lake Ave.
N & S Alley, Block 3.....	Eighth Ave.....	Burnham St.
S, E & W Alley, Block 3.....	W line of N & S Alley.....	Third Ave.
S, E & W Alley, Block 4.....	Third Ave.....	Fourth Ave.
S, E & W Alley, Block 5.....	Fourth Ave.....	Fifth Avenue.
N & S Alley, Block 5.....	Rogers St.....	S W Alley.
S W Alley, Block 5.....	Third Ave.....	N & S Alley, Block 5.
S, E & W Alley, Block 6.....	Fifth Ave.....	Sixth Ave.
N & S Alley, Block 6.....	Burnham St.....	Rogers St.
S, E & W Alley, Block 7.....	Sixth Ave.....	Seventh Ave.
N & S Alley, Block 2 & 7.....	Rogers St.....	Becher St.
E & W Alley, Block 10.....	Sixth Ave.....	Seventh Ave.
N & S Alley, Block 10.....	Maple St.....	Burnham St.
N & S Alley, Block 12.....	Maple St.....	Burnham St.
N & S Alley, Block 14.....	Mitchell St.....	Forest Home Ave.
N & S Alley, Block 14.....	Maple St.....	Burnham St.
S, E & W Alley, Block 133.....	Second Ave.....	Third Ave.
S, E & W Alley, block 139.....	Second Ave.....	Eighth Ave.
N, E & W Alley, Block 139.....	Second Ave.....	Eighth Ave.
N & S Alley, Block 4.....	Mitchell St.....	Maple St.

Making a total length of streets and alleys to be improved of 15,660 lineal feet, which required:

Cubic yards of excavation.....	41,086
Cubic yards of filling.....	5,213
Cubic yards of gravel.....	8,778
Square yards of gutter paving.....	7,106
Square yards of alley paving.....	12,056
Lineal feet of sidewalk planking.....	6,563

STREET IMPROVEMENTS.

SOUTH DIVISION.

During the year 1884 estimates were prepared for improving the following streets and alleys in the Twelfth Ward :

STREET.	FROM	TO
Allis	South Bay street.....	Lincoln avenue.
Garden.....	Becher	Rogers.
Reed	Maple	S. line of N. E. $\frac{1}{4}$ Sec. 5.
Greenbush.....	Burnham	Rogers.
Alley, block 2.....	Railroad.....	Orchard.
Alley, blocks 11 and 128	Orchard	Lapham.

Making a total length of streets and alleys to be improved of 3,660 lineal feet. which required :

Cubic yards of excavation	8,461
Cubic yards of filling.....	21,744
Cubic yards of gravel.....	3,129
Square yards of gutter paving	2,794
Square yards of alley paving	2,104
Lineal feet of sidewalk planking	4,612

RECAPITULATION

Of work completed in the South Division.

Total length of streets and alleys improved during the year 1884 was 28,307 lineal feet, or $5\frac{261}{1000}$ miles, which required:

50,506 cubic yards of cutting.	} at a cost of.....	\$12,094 78
24,537 " " " filling.		
20,283 cubic yards of gravel, at a cost of.....		12,102 73
15,541 square yards of gutter paving, at a cost of.....		6,877 46
15,638 " " " alley paving, at a cost of		8,470 34
10,514 square yards of cedar block pavement, at a cost of.....		7,060 50
6,015 square yards granite pavement, at a cost of.....		13,533 75
1,955 lineal feet of oak planking, at a cost of.....		2,443 75
22,136 lineal feet of sidewalk planking, at a cost of		5,479 43
Total cost.....		\$68,062 74

RECAPITULATION

Of work estimated in the South Division.

The total length of streets and alleys for which estimates were prepared in the year 1884 is 28,622 lineal feet, or $5\frac{421}{1000}$ miles, divided as follows:

Cubic yards of excavation	73,288
Cubic yards of filling.....	40,351
Cubic yards of gravel.....	23,324
Square yards of gutter paving.....	19,905
Square yards of alley paving	17,660
Square yards of granite paving.....	775
Lineal feet of sidewalk planking.....	25,093
Lineal feet of stone curbing	295

PROFILES

Have been made and levels run for establishing grade on the following streets and alleys during the year 1884:

STREET.	FROM.	TO.	LINEAL FEET.
Allis	South Bay street	Lincoln	1,117
Reed	Maple	S line of N E $\frac{1}{4}$ Sec. 5	331
Alma	Third avenue	W line of Woosch's subd.	257
Washington	Eleventh avenue	Thirteenth avenue	678
Scott	Eleventh avenue	Thirteenth avenue	678
Orchard	Seventeenth avenue	W line of W. P. Southern add ..	769
Lapham	E line Tyson's subd.	W line of W. P. Southern add ..	1,345
Twelfth avenue	Railroad	156 feet N of Washington st. ..	1,313
Thirteenth avenue	Railroad	156 feet N of Washington st. ..	1,313
Fifteenth avenue	Railroad	S line of lot 4	1,290
Sixteenth avenue	Railroad	S line of lot 4	1,290
Eighteenth avenue	Railroad	120 feet S of Mitchell st.	1,825
Alley, block 4	Rogers	Alma	313
Alley, block 4	Rogers	Burnham	666
Alley, block 5	Third avenue	W line of Woosch's subd.	580
Alley, block 142	Mitchell	Lapham	649
Total length			14,405

Or, $2\frac{728}{1000}$ miles.

STREET PAVEMENTS.

During the year 1884 the following streets were paved with *Granite Paving*:

STREET.	FROM.	TO.
South Water.....	Reed	Ferry.
Reed	Lake	South Water.
Reed	Park.....	Pierce.

With Cedar Blocks:

STREET.	FROM	TO
Grove	Virginia	Mineral.
Lake st. extended betw. blocks	South Water.....	Dock line.
53 and 54		
Clinton	Railroad.....	Kinnickinnic avenue.
Kinnickinnic avenue	Clinton	Mitchell.

Making a total length of 6,939 lineal feet. All of the above streets had been paved with pine blocks.

REPAVING AND REPAIRING.

The following is the amount of repaving done by the different Ward foremen in their wards:

WARD.	Square yards of gutter paving relaid.	Square yards of alley paving relaid.
Fifth.....	....	100
Eighth.....	220	520
Eleventh.....	276	....
Twelfth.....	555	....

Respectfully submitted,

FRED. SCHNEIDER.

Ass't City Engineer.

To GEO. H. BENZENBERG, Esq.,

City Engineer.

year 1884, and cost of same

SEWERS. IONS.			CEMENT PIPE S DIMENSION	
	36	30	18	15
M6	371	130	63
A	365	.....	.....
A	116
A	55
A	314
M	373
M	741	371
M	365	.....	.....
J	{ 55
J	{ 300
J	{ 82
J
J	288	288
J
A	530	.....	.....
S
S0	65	.....	.....	.....
O0
O	52
6	65	1,631	1,159	2,069

10,547 lineal feet

SOUTH SEWERAGE DISTRICT.

Statement showing the number of lineal feet of Sewers built during the year 1884, and cost of same.

DATE OF CONTRACT. 1884.	NAME OF		LOCATION OF SEWERS.			MANHOLES.	BRICK SEWERS.					CEMENT PIPE SEWERS.			TOTAL LENGTH OF SEWERS.		COST OF SEWERS CHARGEABLE TO		COST OF INSPECTION.	TOTAL COST OF SEWERS.
							DIMENSIONS.					DIMENSIONS.								
	CONTRACTOR.	INSPECTOR.	STREET.	FROM	TO		96	60	42	36	30	18	15	12	BRICK.	PIPE.	PROPERTY.	FUND		
March 22.....	Oscar Knie.....	Jos. Dunn.....	Fifteenth ave.....	South Pierce	National ave	16			346	371	130	63		717	193	\$1,760 38	\$6,223 42	\$168 00	\$8,151 80	
			National ave.....	Fifteenth ave.....	Eighteenth ave.....															
April 8.....	Jas. Markey.....	By. Abert.....	Seventh ave.....	Railroad.....	Orchard.....	3				365				365		278 49	944 26	56 00	1,278 75	
April 8.....	Thos. Lee.....	E. F. Herzberg.....	Seventh ave.....	Washington.....	Madison.....	6							552	552		245 06	245 07	32 00	690 92	
			Howell ave.....	Kinnickinnic ave.....	Lincoln ave.....				116	116	81 27	61 41	10 00	152 68						
April 9.....	Dan'l O'Driscoll.....	Mich. Ryan.....	Bismark ave.....	Orchard st.....	Railroad.....	4						55	276	331		247 44	292 09	51 00	590 53	
April 15.....	Thos. Lee.....	E. F. Herzberg.....	Mineral.....	Seventh ave.....	Ninth ave.....	6						314	274	588		657 63	125 02	36 00	818 65	
May 3.....	Jas. Markey.....	By. Abert.....	Tenth ave.....	National ave.....	Walker.....	8														
			Walker.....	Ninth ave.....	W line Keenan's subd.....				373	394	767	776 54	297 26	45 00	1,118 82					
May 15.....	Charles Roediger.....	Jos. Dunn.....	National ave.....	Eighteenth ave.....	Washington ave.....	15				741	371	266		1,378		1,503 76	866 40	63 00	2,433 16	
May 23.....	Jas. Markey.....	By. Abert.....	Fifth ave.....	Railroad.....	Orchard.....	3				365				365		395 13	782 57	31 50	1,119 20	
			Railroad.....	Reed.....	Hanover.....			276	276	281 21	58 27	7 50	346 98							
June 7.....	Jas. Markey.....	By. Abert.....	National ave.....	Reed.....	Clinton.....	7						55	276	331	419 76	175 19	13 50	608 45		
			South Pierce.....	Reed.....	Clinton.....			276	276											
June 7.....	Jas. Markey.....	By. Abert.....	Sixth ave.....	Mitchell.....	Lapham.....	10						300	300	600	1,059 87	253 96	48 00	1,361 83		
			Mitchell.....	Fourth ave.....	Fifth ave.....			82	277	359										
June 7.....	Thos. Lee.....	E. F. Herzberg.....	Arrow.....	Muskego ave.....	Pearl.....	2							216	216		132 44	146 20	12 00	290 63	
June 25.....	Dan'l O'Driscoll.....	E. G. Hayden.....	Fifth ave.....	Orchard.....	Lapham.....	6					288	288		576		772 80	177 60	37 50	987 90	
July 18.....	Dan'l O'Driscoll.....	E. G. Hayden.....	Seventh ave.....	Railroad.....	Madison.....	3							276	276		304 35	87 57	19 50	411 42	
August 28.....	Jas. Markey.....	By. Abert.....	Seventh ave.....	Maple.....	Burnham.....	5				530				530		558 02	1,175 08	31 50	1,764 60	
			Burnham.....	Seventh ave.....	Eighth ave.....															
September 2.....	Dan'l O'Driscoll.....	Jos. Dunn.....	Fourth ave.....	Maple.....	Burnham.....	3							240	240		267 00	93 00	15 00	375 00	
September 4.....	Jas. Markey.....	Jos. Dunn.....	Railroad.....	Eleventh ave.....	Arthur.....	5			720	65				785		691 69	3,468 81	45 50	4,206 00	
October 11.....	Dan'l O'Driscoll.....	Jos. Dunn.....	Railroad.....	Arthur.....	Fifteenth ave.....	4			540					540		736 67	1,650 13	42 00	2,428 80	
October 11.....	Thos. Lee.....	Pat. Hanley.....	South Water.....	Reed.....	130 feet West.....	2						52	118	170		278 00		9 00	287 00	
Total.....						112			1,606	65	1,631	1,159	2,069	4,017	3,302	7,245	\$11,335 31	\$17,123 30	\$773 50	\$29,432 11

GTH S. PIPE.	COST OF SEWERS CHARGEABLE TO		COST OF INSPECTION.	TOTAL COST OF SEWERS.
	PROPERTY.	FUND		
5,040	\$6,628 71	\$6,368 10	\$523 50	\$13,520 31
2,607	3,006 68	560 31	129 50	3,696 49
4,373	21,537 01	28,310 71	1,750 00	51,597 72
7,245	11,535 31	17,123 30	773 50	29,432 11
9,265	\$42,707 71	\$52,362 42	\$3,176 50	\$98,246 63
\$98,246 63				

files.

RECAPITULATION.

DISTRICT.	BRICK SEWERS. DIMENSIONS.					CEMENT PIPE SEWERS DIMENSIONS.			TOTAL LENGTH OF SEWERS.		COST OF SEWERS CHARGEABLE TO		COST OF INSPECTION.	TOTAL COST OF SEWERS.
	96	60	42	36	30	18	15	12	BRICK.	PIPE.	PROPERTY.	FUND		
East Sewerage District				58	1,458	2,288	645	2,107	1,516	5,740	\$6,628 71	\$6,368 10	\$523 50	\$13,520 31
West Sewerage District—A					31	933	858	816	31	2,607	3,006 68	560 31	129 50	3,696 49
West Sewerage District—B	655	1,354	114	1,600	1,546	1,672	4,380	8,321	5,359	14,373	21,537 01	28,310 71	1,750 00	51,597 72
South Sewerage District			1,606	65	1,631	1,159	2,069	4,017	3,302	7,245	11,535 31	17,123 30	773 50	29,432 11
Total	655	1,354	1,720	1,813	4,666	6,052	7,952	15,261	10,208	29,265	\$42,707 71	\$52,362 42	\$3,176 50	\$98,246 63
	10,208					29,265			39,473		\$98,246 63			

39,473 lineal feet or $7\frac{475}{1000}$ miles.

Total length of Sewers up to 1884, $110\frac{775}{1000}$ miles, at a cost of \$1,288,364 43.

Total length of Sewer during 1884, $7\frac{475}{1000}$ miles, at a cost of 98,246 63

Total..... $118\frac{230}{1000}$ miles, at a cost of \$1,386 611 06.

TABLE

Showing the location of Catch Basins with Sewer Ventilators built during 1884.

A. WEST SEWERAGE DISTRICT.

N E corner of Booth street and Garfield avenue.
 N E corner of Sixth and Sherman streets.
 N W corner of Queen Ann Place and Wells street.
 N E corner of Second and Wright streets.
 N W corner of Second and Wright streets.
 S E corner of Second and Wright streets.
 N W corner of Eighteenth street and Cold Spring avenue.
 S W corner of Eighteenth and Prairie streets.
 N W corner of Eighteenth and Prairie streets.
 S W corner of Twentieth and Cedar streets.
 N E corner of Fourth and Galena streets.
 N W corner of Eighteenth and Vliet streets.
 N E corner of Twenty-third and Wells streets.
 S E corner of Twenty-third and Wells streets.
 N E corner of Twenty-fourth and Wells streets.
 S E corner of Twenty-fourth and Wells streets.
 N E corner of Twenty-second and Wells streets.
 N E corner of Ninth and Lee streets.
 S E corner of Ninth and Lee streets.
 N W corner of Ninth and Lee streets.
 S W corner of Ninth and Lee streets.
 N E corner of Eighth and Lee streets.
 N W corner of Eighth and Lee streets.
 S E corner of Eighth and Lee streets.
 S W corner of Eighth and Lee streets.
 S W corner of Eighteenth and Fowler streets.
 N E corner of Eighteenth and Fowler streets.
 N W corner of Eighteenth and Fowler streets.
 N W corner of Seventeenth and Fowler streets.
 N E corner of Seventeenth and Fowler streets.
 S W corner of Seventeenth and Fowler streets.
 S E corner of Seventeenth and Fowler streets.
 S W corner of Eighteenth and Clybourn streets.

S E corner of Twelfth and Sherman streets.
 N E corner of Washington avenue and Walnut streets.
 S E corner of Washington avenue and Walnut streets.
 S E corner of Ninth and Centre streets.
 N W corner of Twentieth street and Grand avenue.
 N W corner of Third and Hadley streets
 N E corner of Third and Hadley streets.
 S W corner of Nineteenth and Vliet streets.
 N E corner of Seventh and Locust streets.
 S W corner of Seventh and Locust streets.
 W side of Sixth street near State street
 S side of Germania and Eighth streets.
 W side of Seventh street, north of Germania street.
 E side of Seventh street, north of Germania street.
 N side of Prairie street, between Fifteenth and Sixteenth streets.
 S side of Prairie street, between Fifteenth and Sixteenth streets.
 E side of Fifth street, between Sycamore and Clybourn streets.
 S side of Grand avenue near Fifteenth street.

Total, 51 new Catch Basins.

B. EAST SEWERAGE DISTRICT.

S E corner of Pearson and Marshall streets.
 N E corner of Pearson and Marshall streets.
 N E corner of Pearson and Van Buren street.
 S E corner of Pearson and Cass streets.
 N E corner of Pearson and Astor street.
 S E corner of Murray avenue and Summit streets.
 N E corner of Murray avenue and Summit street.
 N W corner of Murray avenue and Greenwich street.
 N E corner of Murray avenue and Greenwich street.
 N W corner of North Water and Knapp streets.
 S W corner of Michigan and Beach streets.
 S W corner of River and Biddle streets.
 N E corner of Oakland avenue and Woodstock Place.
 E side of Warren avenue, between Brady street and Arlington Place.
 W side of Warren avenue, between Brady street and Arlington Place.
 W side of Franklin street, between Brady and Kewaunee streets.
 E side of Franklin street, between Brady and Kewaunee streets.

Total, 17 new Catch Basins.

C. SOUTH SEWERAGE DISTRICT.

N W corner of Florida and Barclay streets.
 S W corner of Seventh avenue and Washington street.
 S W corner of Fifteenth and National avenues.
 N W corner of Fifteenth and National avenue.

S W corner of Sixteenth and National avenues.
 S E corner of Sixteenth and National avenues.
 N W corner of Sixteenth and National avenues.
 S W corner of Seventeenth and National avenues.
 S E corner of Seventeenth and National avenues.
 N W corner of Seventeenth and National avenues.
 S W corner of Eighteenth and National avenues.
 S E corner of Eighteenth and National avenues.
 N W corner of Eighteenth and National avenues.
 S E corner of Nineteenth and National avenues.
 N W corner of Nineteenth and National avenues.
 S E corner of Twentieth and National avenues.
 N W corner of Twentieth and National avenues.
 S E corner of Twenty-first and National avenues.
 N W corner of Twenty-first and National avenues.
 N W corner of Twenty-second and National avenues.
 S E corner of Fifth avenue and Orchard street.
 S W corner of Fifth avenue and Orchard street.
 N W corner of Fifth avenue and Lapham street.
 S E corner of Grove and Scott streets
 S E corner of Mineral street and Eighth avenue
 N E corner of Mineral street and Eighth avenue.
 S W corner of Scott street and Ninth avenue.
 N W corner of Scott street and Ninth avenue.
 N E corner of Mineral street and Tenth avenue.
 N E corner of Burnham street and Eighth avenue.
 S E corner of Burnham street and Eighth avenue.
 S W corner of Burnham street and Seventh avenue.
 N W corner of Burnham street and Fourth avenue.
 N E corner of Railroad street and Fifteenth avenue.
 N E corner of Railroad street and Fourteenth avenue.
 S E corner of Bow and Arthur streets.
 S E corner of National ave, and Alley between Reed, and Clinton streets.
 Total, 37 new Catch Basins.

RECAPITULATION.

A. West Sewerage District	51	new	Catch	Basins.
B. East Sewetage District.....	17	"	"	"
C. South Sewerage District.....	37	"	"	"
Total.....	105	"	"	"

TABLE

Showing location of Catch Basins with Sewer Ventilators rebuilt during 1884.

A. WEST SEWERAGE DISTRICT.

N E corner of Third and Wright streets.
 N W corner of Third and Wright streets.
 S E corner of Third and Wright streets.
 S W corner of Third and Wright streets.
 N E corner of Third and Clark streets.
 N W corner of Third and Clark streets.
 S E corner of Third and Clark streets.
 S W corner of Third and Clark streets.
 N E corner of Third and Centre street.
 N W corner of Third and Centre street.
 S E corner of Third and Centre street.
 S W corner of Third and Centre streets.
 N E corner of Third and Fowler streets.
 N W corner of Third and Fowler streets.
 N E corner of Fourth and Fowler streets.
 N W corner of Fourth and Fowler streets.
 N E corner of Twelfth and Sherman streets.
 N W corner of Twelfth and Sherman streets.
 S W corner of Twelfth and Sherman streets.
 S E corner of Twelfth and Harmon streets.
 S W corner of Twelfth and Harmon streets.
 S E corner of Twelfth and Lloyd streets.
 S W corner of Twelfth and Lloyd streets.
 N E corner of Twelfth and Lloyd streets.
 N W corner of Twelfth and Lloyd streets.
 S E corner of Thirteenth and Vliet streets.
 N E corner of Fourteenth and Vliet streets.
 N W corner of Fourteenth and Vliet streets.
 S E corner of Fourteenth and Vliet streets.
 S E corner of Fifteenth and Vliet streets.
 N E corner of Fifteenth and Vliet streets.
 N W corner of Fifteenth and Vliet streets.
 S E corner of Sixteenth and Vliet streets.

N E corner of Sixteenth and Vliet streets.
 N W corner of Sixteenth and Vliet streets.
 S E corner of Seventeenth and Vliet streets.
 N E corner of Seventeenth and Vliet streets.
 N W corner of Seventeenth and Vliet streets.
 N E corner of Eighteenth and Vliet streets.
 N E corner of Nineteenth and Vliet streets.
 N W corner of Nineteenth and Vliet streets.
 S E corner of Nineteenth and Vliet streets.
 N W corner of Fifteenth street and Grand avenue.
 N E corner of Sixteenth street and Grand avenue.
 N W corner of Sixteenth street and Grand avenue.
 S W corner of Sixteenth street and Grand avenue.
 S W corner of Seventeenth street and Grand avenue.
 N W corner of Seventeenth street and Grand avenue.
 N E corner of Eighteenth street and Grand avenue.
 N W corner of Eighteenth street and Grand avenue.
 S W corner of Eighteenth street and Grand avenue.
 N W corner of Nineteenth street and Grand avenue.
 S W corner of Nineteenth street and Grand avenue.
 S W corner of Twentieth street and Grand avenue.
 Total, 54 Catch Basins rebuilt.

B. EAST SEWERAGE DISTRICT.

S E corner of Ogden and Jackson streets.
 N E corner of Lyon and Jackson streets.
 S W corner of Lyon and Jackson streets.
 S E corner of Lyon and Jackson streets.
 S E corner of Lyon and Van Buren streets.
 S W corner of Lyon and Van Buren streets.
 S E corner of Lyon and Jefferson streets.
 N E corner of Lyon and Jefferson streets.
 S W corner of Knapp and Astor streets.
 N W corner of Knapp and Astor streets.
 S E corner of Knapp and Marshall streets.
 S E corner of Martin and Van Buren streets.
 S E corner of Division and Van Buren streets.
 S E corner of Oneida and Jefferson streets.
 N E corner of Mason and Jefferson streets.
 N W corner of Mason and Jefferson streets.
 S W corner of Ogden and Van Buren streets.
 S E corner of Ogden and Van Buren streets.
 N E corner of Ogden and Van Buren streets.
 N W corner of Pleasant and Van Buren streets.
 N E corner of Pleasant and Van Buren streets.
 S W corner of Pleasant and Van Buren streets.
 S E corner of Pleasant and Van Buren streets.
 S W corner of Brady and Van Buren streets.

S E corner of Brady and Van Buren streets.
 S W corner of Brady street and Farwell avenue.
 S E corner of Brady street and Farwell avenue.
 N E corner of Keene street and Farwell avenue.
 S E corner of Keene street and Farwell avenue.
 S E corner of Albion street and Farwell avenue.
 N E corner of Albion street and Farwell avenue.
 Total, 31 catch basins rebuilt.

C. SOUTH SEWERAGE DISTRICT.

N E corner of Reed and South Water streets.
 N W corner of Reed and South Water streets.
 S E corner of Reed and South Water streets.
 S W corner of Reed and South Water streets.
 N E corner of Clinton and South Water streets.
 N W corner of Clinton and South Water streets.
 S E corner of Clinton and South Water streets.
 S W corner of Clinton and South Water streets.
 N E corner of Lake and Ferry streets.
 N W corner of Lake and Ferry streets.
 N E corner of Lake and Barclay streets.
 N W corner of Lake and Barclay streets.
 S E corner of Lake and Barclay streets.
 S W corner of Lake and Barclay streets.
 N E corner of South Water and Ferry streets.
 S W corner of South Water and Ferry streets.
 2 on Ferry street between South Water and Laks streets.
 S W corner of Second avenue and Orchard street.
 S E corner of Eight and National avenues.
 N E corner of Walker and Grove streets.
 S W corner of Scott street and Seventh avenue.
 N W corner of Scott street and Seventh avenue.
 S E corner of Third avenue and S Pierce street.
 2 on South Pierce street between Eighteenth and Nineteenth avenues.
 S W corner of Fifth avenue and Scott street.
 N W corner of Sixth avenue and Scott street.
 N W corner of College Pl. and Hanover street.
 S E corner of Madison and Grove street.
 N W corner of Fifth avenue and Scott street.
 N W corner of Clinton and Lapham streets.
 N W corner of Reed and Orchard streets.
 Total, 33 catch basins rebuilt.

RECAPITULATION.

A. West Sewerage District.....	54	catch basins rebuilt.
B. East Sewerage District.....	31	" " "
C. South Sewerage District	33	" " "
Total.....	118	" " "

REPORT OF THE ENGINEER

OF THE

North Point Pumping Station,

FOR THE YEAR ENDING

DECEMBER 31st, 1884.

REPORT OF THE ENGINEER OF THE NORTH POINT PUMPING STATION

For the year ending December 31st, 1884.

NORTH POINT PUMPING WORKS, {
January 14th, 1884. }

To G. H. BENZENBERG, Esq., *City Engineer*.

SIR:—The report of the operation of machinery at this station is herewith submitted for the year ending December 31st, 1884.

All the machines are now in good working condition, number 1 and 2 engines supplying the city with water at present writing.

Only ordinary repairs were made at this station during the year, except putting bed plate under No. 3 pump and air chamber to strengthen foundation.

The work done by each engine was as follows:

Engines number 1 and 2 coupled were in operation 2,496 hours and 20 minutes, making 1,863,190 revolutions, pumping 1,661,033,885 gallons of water.

Engines number 1 or 2 single operated 2,486 hours and 35 minutes and made 1,916,860 revolutions, pumping 854,440,345 gallons of water.

Engine number 3 operated 6,033 hours, making 8,167,950 revolutions, pumping 2,836,075,599 gallons of water.

The total number of gallons of water pumped by the three engines was 5,351,549,821 or an average of 14,621,720 gallons per day.

The average daily pumpage for the previous year was 14,788,701 gallons, or a decrease in daily average of 166,981 gallons.

The total amount of coal consumed at this station for all purposes was 8,804,500 pounds.

The amount of ashes taken from the furnaces was 1,371,719 pounds, or $15\frac{57}{100}$ per cent of coal consumed.

The average lift of water was $158\frac{50}{100}$ feet.

The average duty of three engines, calculated from total coal consumed at the works for all purposes was 80,443,436 pounds, lifted one foot per 100 pounds of coal consumed.

For performance of each machine I refer you to the following monthly statements.

January 1st, 1884:

	TONS.	LBS.
Amount of coal on hand and received from R. P. Elmore & Co., contract 1883..	2,303	600
Coal received from Penn. Coal Co., contract 1884.....	3,147.	1,570
Total.....	5,451.	170
Total coal consumed, 1884.....	4,402.	500
Coal on hand December 31, 1884.....	1,048.	1,670
Cotton waste on hand.....		
Lubricating compound.....		200
	GALLONS.	
Lard oil.....		38
Cylinder oil.....		70
Machine oil.....		100
Head Light oil.....		5

SHOP REPAIRS.

	DAYS.	HRS.
Engines 1 and 2, repairs.....	24	4
Engine 1 and 2, fitting cups for lubricating compound.....	14	7
Engine 1 and 2, fitting pipes for receivers.....	8	1
Engine 3, repairs.....	14	1½
Suction pipe.....	3	5
Distribution.....	3	2
Shop tools.....	5	
Total.....	73	2½

Statement showing the No. of Hours Pumping with No. of Revolutions and average No. per minute made with each Engine, average Water Pressure and depth in Pump Well and Lake for year ending December 31, 1884.

MONTHS 1884.	Number of hours pumping, Engines 1 and 2 coupled.	Number of hours pumping, Engines 1 or 2 single.	Number of hours pumping, Engines 1 and 2 coupled.	Number of Revolutions, Engines 1 or 2 single.	Number of Revolutions, Engine 3.	Average number of Rev. per minute, 1 and 2 coupled.	Average number of Rev. per minute, 1 or 2 single.	Average number of Engine 3.	Average Water Pressure in Pounds.	Average Depth in Well in Feet.	Average Depth in Lake in Feet.
January.....	.....	370.50	722.00	270,410	1,014,280	.....	12.15	23.41	57.32	6.88	.....
February.....	.....	232.35	676.00	189,850	982,780	.....	13.60	24.23	57.33	8.80	.....
March.....	.....	238.30	689.20	191,180	1,001,480	.....	13.00	24.21	57.01	9.22	13.60
April.....	.....	217.45	600.15	178,680	885,090	.....	13.67	24.57	55.74	10.13	13.40
May.....	437.15	186.00	189.00	153,280	275,362	12.74	13.73	24.28	54.88	10.00	13.10
June.....	657.00	.....	504.900	.....	.....	12.80	.....	.....	55.16	10.07	13.92
July.....	616.55	.....	470,950	.....	154,680	12.71	.....	22.68	56.38	9.83	13.50
August.....	.....	379.40	689.00	276,440	928,660	.....	12.13	22.46	56.32	9.43	13.46
September.....	189.10	201.35	829.15	168,230	864,640	8.92	13.90	17.37	56.84	8.69	.....
October.....	35.30	377.55	732.00	14,900	945,410	7.00	12.08	21.52	56.07	9.05	13.10
November.....	59.00	198.30	603.30	145,910	849,170	13.6	12.25	24.80	56.03	9.28	13.30
December.....	501.30	83.15	189.00	68,950	266,400	12.9	13.8	23.40	55.80	8.88	12.94
Totals and Averages.	2,496.20	2,486.35	6,033.00	1,916,860	8,167,950	12.4	12.8	22.50	56.18	9.18	13.3

Statement giving head of water in feet, coal consumed in pounds, total quantity of water pumped and daily average for 1883 and 1884, and average duty of the three engines for the year ending Dec. 31, 1884.

MONTHS. 1884.	Head of water in feet.	Coal consumed for pumping in pounds.	Coal consumed for banking fires in pounds.	Coal consumed for starting fires in pounds.	Total coal consumed in pounds.	Total ashes taken from furnace in pounds.	Total quantity of water pumped.	Average quantity of water pumped daily 1884.	Average quantity of water pumped daily 1883.	Duty of engines calculated from total coal consumed.
January.....	163.42	716,800	1,500	3,000	721,300	110,976	472,713,558	15,248,824	17,384,511	89,217,059
February.....	161.53	656,100	1,200	5,100	662,400	103,443	425,866,509	14,685,052	17,503,353	86,504,614
March.....	160.37	671,400	2,700	6,900	681,000	107,796	432,953,369	13,965,560	15,155,223	85,133,916
April.....	156.52	584,700	5,100	6,000	595,800	91,944	386,967,559	12,868,918	14,798,717	84,884,886
May.....	154.67	774,600	3,000	10,200	787,800	123,325	462,016,999	15,400,566	14,010,645	75,741,609
June.....	155.25	806,800	3,000	7,800	817,600	147,623	450,118,350	15,003,945	15,002,778	71,368,064
July.....	158.30	852,600	3,000	6,300	861,900	157,912	473,559,914	15,276,126	14,473,739	72,624,882
August.....	158.57	688,000	3,000	6,900	697,900	106,952	445,672,455	14,376,530	14,382,147	84,553,207
September.....	160.51	766,400	900	2,100	769,400	117,151	465,508,858	15,516,961	15,175,015	81,089,446
October.....	158.37	725,200	1,800	3,900	730,900	101,407	463,653,907	14,956,545	13,566,916	83,990,374
November.....	158.05	633,100	3,900	6,900	643,900	85,534	402,929,809	13,430,993	12,966,013	82,583,090
December.....	157.91	820,500	4,500	10,500	835,500	117,656	469,599,534	15,148,081	13,305,058	74,174,368
Totals and averages.	158.50	8,696,200	33,600	74,700	8,804,500	1,371,719	5,351,540,821	14,621,720	14,788,701	80,443,436

GENERAL CONDITION OF THE WORKS.

Principal work done during the year at the North Point Pumping Works, January 8th, stopped No. 1 Engine; Engine 2 and 3 supplying the city till May 11th.

Work done on No. 1 Engine: Fitted cups for lubricating compound to all the large bearings on No. 1 and 2 Engines, this has made considerable saving as you will see by the oil bill.

Refitted brass boxes on crosshead of Pnmp: No. 1 Engine repaired and fitted with new seats, discharge valves, and put new seat in steam valve.

On May 11th, Engine No. 3 was stopped to put in bed plate, to strengthen foundation on the bottom of pump well and was not started again till July 20th, the supply being kept up by No. 1 and 2 Engines coupled.

This repair on No. 3 Engine as was experienced in making, similar repairs on No. 1 and 2 Engine has had the desired effect and little trouble is expected from the same source for a long time.

From August 19th to September 23d the city was supplied with water direct through the mains, when repairing Reservoir. The supply was steady and uninterrupted and the pressure equal to that when flowing from a full Reservoir.

Some experiments were made early in the year with temporary receivers on No. 2 Engine, and the increase in duty showed that it would pay to put in permanent receivers to No. 1 and 2 Engines, this was done in September and a run of 24 hours made in December with the following results:

17,657,940 galls. x 8.35 lbs. x 158.12 ft. }	85,398,586.
27,300 lbs coal consumed. }	

Or a duty of 85,398,586 lbs. lifted one foot per 100 lbs of coal consumed. This has shown an increase of duty of about 10 per cent. by this improvement.

Engine 3 was stopped for two weeks in December. High pressure, piston and cylinder valves and stuffing boxes were examined and repacked.

The city is now being supplied by Engine 1 and 3.

BOILERS.

Only ordinary repairs were made on boilers during the year, and they are now in fair working condition. A needed improvement has been commenced by making provisions for the addition of three boilers. When the boilers are in position the capacity will be enough to furnish steam for all the machinery in building, and will still more insure a steady head of water being kept up, and relieve the present boilers of the additional pressure necessary to run the machinery.

REPAIR SHOP.

As this has proved itself a good investment, when the repairs of this department can be made better and cheaper than by sending to the machine shops, better facilities has been provided in the new building where all ordinary repairs can be made, not only for the pumping station, but in time for the whole department. The only expensive tool required at present for this addition will be an iron planer, one with a bed about four feet long and about "24 x 24" between shears will be long enough to take in any ordinary piece of work at this station. This tool will also pay good interest on the investment.

BUILDINGS.

Only slight repairs were made on the old buildings this year. The conductors were connected to suitable sewers, provided, this was a needed improvement as provisions had not been made previous to this, and the water flowed over the yard.

All the outside iron work, doors and window frames received coat of paint to make them correspond, to the addition which has added much to the appearance of the place.

The stand pipe and iron stairs in tower were also painted. This was done by the employees early in the spring, the buildings are now in good condition.

GROUNDS.

The grading of the grounds for the reception of the work shop, boiler and coal house was done under contract with P. Drew.

The sodding of the slopes and graveling of roadway and gutters, was done on day's time, the sods used were cut off the city grounds, thus saving time and expense in hauling from a distance. This ground can be plowed and seeded down in spring at a slight cost. The work of grading about engine house could not be done before frost, but will be put in shape as soon as the weather will be favorable in the spring, and the yard graveled, making the place more attractive.

LAKE PIER AND CRIB.

As only a few of the piles were broken the past year and some of the heavy timber washed away, the work of repairing was done by men employed at the works, and the portions that were shaky extra bolted and made secure. It is now in good repair.

TOOLS AND MATERIAL

At North Point Pumping Station.

Turning Lathe, complete	1
Turning Tools.....	14
Lathe Dogs	4
Driver	1
Mandrils	2
Drilling Machine, complete.....	1
Twist Drills.....	18
Common Drills.....	16
Hand Brace.....	1
Drills for Hand Brace	20
5x8 Engine for Driving Tools	1
Grind Stones.....	2
Machine Taps and Dies, $\frac{1}{4}$ to $1\frac{1}{2}$	
Pipe Taps, $\frac{1}{4}$ to $1\frac{1}{2}$	
Pipe Tongs	13
Pipe Cutter	1
Open Wrenches.....	24
Close Wrenches	14
Monkey Wrenches.....	5
Stop Cock Wrenches.....	2
Hand Hammers.....	3
Files, assorted.....	24
Chisels.....	18
Ratchets	3
Ratchet Drills.....	15
Boring Clamp.....	1
Sledge Hammers.....	3
Iron Rammer	1
Bench Vice	2
Pipe Vice	1

Hand Vice.....	1
Steel Bars	4
Packing Screws	5
Soldering Iron	1
Spirit Level.....	1
Surveyor's Level	1
Plummet.....	1
Hand Saw	1
Screw Drivers.....	2
Plane	1
Square.....	1
Chopping Axes.....	2
Augers.....	5
Oil Stone	1
5 Ton Block.....	1
2 Ton Block.....	1
16-inch Block, single.....	1
10-inch Block, doubles.....	2
8-inch Blocks, double.....	4
8-inch Blocks, single.....	3
6-inch Block, single	1
6-inch Block, double.....	1
Line for above Blocks, feet.....	800
Oil Tank, 150 gallon	1
Oil Tank, 50 gallon	2
5 gallon Oil Cans, tin	2
2 gallon Oil Cans, tin.....	1
1 gallon Oil Can, tin	4
1 gallon Oil Cans, brass.....	2
Filling Cans, brass.....	4
Squirt Cans.....	6
Hand Lamps	10
Boiler Lamps.....	4
Bracket Lamps	36
Table Lamp	1
Lanterns.....	3
Corn Brooms.....	4
Paint Brush.....	1
Water Pails.....	6
Thermometers.....	2
25 foot Ladder	1
20 foot Ladder.....	2
8 foot Step Ladder.....	1
5 foot Step Ladder.....	2
Tables.....	2
Chairs.....	7
Setters	3
Cuspadores.....	3
Firing Tool Sets	2

Coal Scale, 5 ton.....	1
Coal Scale, $\frac{1}{2}$ ton.....	1
Iron Barrows.....	3
2-inch Hose, feet.....	150
$\frac{3}{4}$ -inch Hose, feet.....	200
Portable Forge.....	1
Anvil.....	1
Cold Chisels.....	3
Forges.....	10
Swedges, top and bottom.....	8
Fullers.....	4
Flatters.....	3
Punches.....	3
Heading Toois.....	10
Sledge.....	1
Hand Hammer.....	1
Steel Stamp.....	1
Brand.....	1
Bars $\frac{1}{2}$ round Iron.....	1
Bars $\frac{3}{8}$ round Iron.....	1
Bars $\frac{1}{2}$ round Iron.....	1
Bars $\frac{5}{8}$ round Iron.....	2
Bars $\frac{3}{4}$ round Iron.....	3
Bars $\frac{7}{8}$ round Iron.....	2
Bars 1 round Iron.....	2
Bars $1\frac{1}{2}$ round Iron.....	1
Bars $1\frac{1}{4}$ round Iron.....	$1\frac{1}{2}$
Sheet 1-16 Plate.....	1
Bars Tool Steel.....	2
Blacksmith Coal, ton.....	$\frac{3}{4}$
Shovels.....	2
Spades.....	2
Paving Hammer.....	1
Pounder.....	1
Scythe.....	1
Sicle.....	1
Lawn Mower.....	1
Iron Rakes.....	2
Hay Rake.....	1
Tree Trimmer.....	1
Picks.....	2
Grubs.....	2
Hoe.....	1
Wheel Barrows.....	2
Plow.....	1
Hatchet.....	1
Stone Cart.....	1
Hand Cart.....	1
3 inch Wrought Pipe.....	30

3 inch Valves.....	1
36 inch Cast Pipe.....	6
36 inch Cast Curves.....	2
30 inch Cast Pipes.....	3
30 inch Cast Short Pieces.....	2
20 inch Cast Pipe.....	6
36 inch Gate.....	1

Respectfully snbmitted,

THOS. McMILLAN, *Engineer.*

REPORT OF THE ENGINEER AT THE WEST SIDE PUMPING WORKS

For the year ending December 31st, 1884.

WEST SIDE PUMPING STATION,
MILWAUKEE, January 8th, 1885. }

TO GEO. H. BENZENBERG, ESQ., *City Engineer*:

SIR:—I herewith respectfully submit report of the operation of Pumping Engines at the station for the year ending December 31st, 1884.

Engine No. 1 (Cope & Maxwell Pump) was in operation 6,697 hours and 15 minutes, making 17,517,664 revolutions and pumping 212,255.180 gallons of water, or an average of 760,777 gallons per day.

Engine No. 2 (E. P. Allis & Co. Pump) was running 2,043 hours and 45 minutes, making 2,673,774 revolutions and pumping 114,972,282 gallons of water, or an average of 1,705,556 gallons per day.

The total amount of water pumped by both engines during the year was 327,227,462 gallons.

The total amount of coal consumed at the station for pumping purposes was 505,490 pounds. The amount of ashes taken from furnace was 88,078 pounds or 17.4 per cent. of coal consumed for pumping.

The amount of coal used for heating the building was 16,037 pounds, and for tower 3,922 pounds. The total amount of coal consumed for all purposes is 532,699 pounds.

Amount of coal on hand and received during the year 1884:

	TONS.	LBS.
Coal in shed December 31, 1883.....	89	1,613
Coal received of R. P. Elmore & Co.....	126	1,800
Coal received from Penn. Coal Co.....	182	500
Total	398	1,913
Total coal consumed.....	266	699
Coal on hand	132	1,214
Cotton waste.....		125
Machine Oil.....		45
Cylinder Oil.....		10
Lard Oil.....		25

The following is a monthly statement of the two engines, showing the number of hours pumping, the number of revolutions, the water pressure and the average of revolution per minute, also the amount of coal consumed and the amount of ashes taken from furnace.

ENGINE NO. 1.

MONTHS.	Number of hours pumping.	Total number of revolutions.	Coal consumed for pumping.	Coal for starting fires.	Amount of ashes.	Average number of revolutions per minute.	Average water pressure.
January.....	743	1,979,220	39,850	800	6,601	44.17	36
February.....	696	1,609,360	32,800	300	5,429	38.53	40
March.....	744	1,887,960	36,700	400	6,048	40.05	37
April... ..	713	2,023,124	34,500	350	6,433	47.29	29
May.....	744	2,217,598	35,475	350	6,742	47.67	27
June.....	713	1,827,351	39,200	350	7,982	42.70	41
July.....	732	1,795,068	40,300	300	7,977	40.89	42
August.....	744	1,859,573	42,300	350	8,309	41.65	38
September.....	648	1,733,684	37,000	1,700	7,628	44.66	35
October.....	173.30	438,413	9,675	950	7,148	40.57	39
November.....	20	60,001	1,650	350	8,386	50.00	15
December.....	26.45	86,312	1,875	1,050	9,400	55.77	35
Total.....	6697.15	17,517,664	351,325	7,250	88,078	43.59	36

ENGINE NO. 2.

September.....	65	.....	6,400	.....	.....	.....	45
October.....	567.30	661,910	39,600	.....	.....	19.43	45
November.....	693	961,635	53,581	.....	.....	23.12	45
December.....	717.15	1,050,229	60,975	.....	.....	24.40	45
Total.....	2043.45	2,673,774	154,165	.....	.....	22.53	45

CONDITION OF THE WORKS.

The Cope & Maxwell pump was supplying the district up to September 21st, and was running without almost any interruption. Repairing considered necessary and of small scale was done at night time, and arrangements made to keep the water pressure up by running them single. The pumps did very good service under the circumstances they were working, but the ordinary wear to some parts will make repairs necessary. I wish to recommend that the pumps be given a thorough overhauling and put in good shape, as by doing so they will prove valuable in case of accident to the large pump, even if the water pressure would not be fully as good as required.

October 9th the North District was turned on by your orders, and ever since that time the new pumping engine of E. P. Allis & Co. was working and supplying both districts. The chart taken by Edson's Recording Gauge every 24 hours proves that the required pressure (45 pounds) was kept up as regular as possible.

THE BOILERS

are now in a good, serviceable condition. The changes made on furnace and chimney flue, to effect a better draught, are of great benefit in keeping up steam. The brick work of Boiler No. 2 (south boiler) is probably all that needs repairing.

Considerable work and repairing have been done to building and tower during the year. The vestibule erected in front of main entrance is a good improvement on former entrance. The engine room walls were calcimined, the wood work painted and grained, and everything made more comfortable for the employes at the Station.

The inside of tower, standpipe and stairway was also painted. At the close of my report I wish to say that, with the few exceptions mentioned, everything is in a satisfactory condition.

INVENTORY OF TOOLS AND MATERIAL.

Set of Machine Taps and Dies, from $\frac{1}{4}$ to 1 inch.

Set of Pipe Dies and Stock, from $\frac{1}{4}$ to 1 inch.

Set of Pipe Tongs, from $\frac{1}{4}$ to 2 inch.

Set of 12 Wrenches, from $\frac{1}{2}$ to 2 inch.

Mankey Wrenches	3
Tap Wrench	1
Ratchet.....	1
Brace.....	1
Hatchet.....	1
Drawing Knife.....	1
Hand Saws.....	2
Pipe Cutter.....	1
Camp Wrench	1
Breast Drill	1
Shears	1
Jack.....	1
Files, assorted....	15
Planes.....	2
Wood Chisels	3
Screwdriver.....	1
Extension Bit.....	1
Spirit Level.....	1
Hydrant Wrenches.....	3
Drills.....	12
Chisels	5
Crowbar	1
Pinch Bar	1
Tongs	4
Swedges, top and bottom.....	10
Forge and Anvil	1
Sledge.....	1
Vise	1
Lawn Mower	1
Rakes	1
Saw Horses.....	2
Lanterns	1
Soldering Iron.....	1

Step Ladder.....	1
Water Pails.....	2
Grindstone.....	1
Hand Hammer.....	1
Socket Wrenches.....	3
Stop-cock Wrenches.....	2
Ladder, 16 feet.....	1
Ladder, 10 feet.....	1
Ladder 5 feet.....	1
Table Lamp.....	1
Leather, lbs.....	5
Stoves and Pipe.....	3
Shovels.....	2
$\frac{1}{2}$ Iron Scale.....	1
Wheelbarrow.....	1
Coal Screen.....	1
Saw and Buck.....	1
Ax.....	1
Hose, 1-inch, feet.....	40
Set of Firing Tools.....	2
10 Gallon Cans.....	2
5 Gallon Cans.....	2
Rubber Mats.....	2
Oil Tanks, 55 gall.....	2
Clock.....	1
Chairs.....	4
Table.....	1
Brooms.....	4

STEAM FITTINGS.

	FEET.
2 inch pipe.....	18
1½ inch pipe.....	30
2½ inch pipe.....	12
½ inch pipe.....	20
¼ inch pipe.....	10
Couplings, from ½ to 1½ inch.....	70
Nipples, from ¾ to 1½ inch.....	63
Unions, from ¼ to 1½ inch.....	35
Elbows, from ¼ to 1¼ inch.....	75
Plugs, from ¼ to 1¼ inch.....	50

Respectfully,

GUSTAV MERKE, *Engineer.*

REPORT
OF
SUPERINTENDENT OF DISTRIBUTION
FOR THE YEAR
1884.

REPORT OF SUPERINTENDENT OF DISTRIBUTION.

OFFICE OF MILWAUKEE WATER WORKS, }
 January 3, 1885. }

GEO. H. BENZENBERG, ESQ.,

City Engineer.

I herewith submit report of work done by Distribution Department during the year 1884.

LEAKS REPAIRED IN WATER MAINS.

Joint of 16 inch main on Milwaukee street, 150 feet south of Chicago street.

Joint of 30-inch main on Fourth street, 140 feet north of Harmon.

Joint of 30-inch main on North street, 100 feet west of railroad track.

BRANCH CONNECTIONS MADE.

For fire purposes.....	3
For hydraulic elevators.....	6
For private use.....	3
For motor.....	1
Total	13

WET CONNECTIONS MADE.

With 6-inch mains	45
With 8-inch mains.....	7
With 12-inch mains.....	7
Total.....	59

MISCELLANEOUS.

Double Nozzle Wood Hydrants set	42
Hydrants repaired	36
Hydrants drained	97
Hydrants exchanged.....	4
Hydrants exchanged for double nozzle	18
Hydrants moved to conform with curb.....	10
Oak frames put on stop cock boxes.....	24
Wooden stop cock boxes replaced by iron	9
Stop cocks put in.....	2
Four ways cut out.....	1
Stop cocks repaired	4

NUMBER AND MAKE OF HYDRANTS IN USE.

LOCATION.	STOWELL.	MOODY.	WOOD.	D. N. WOOD.	BROWN.	SHERIFF.	LOWRY.	TOTAL.
East Side.....	97	19	60	37	23	18	4	258
West Side.....	229	56	56	18	31	25	3	418
South side	180	38	13	5	4	2	2	244
Total.....	506	113	129	60	58	45	9	920

NUMBER OF HYDRANTS DRAINED.

East side	149
West side	262
South side	148
Total	560

During last year 460 feet of 6-inch pipe were taken out on Broadway from south line of Wisconsin to south line of Mason street, and replaced by 12-inch.

At North Point Pumping Works took up 196 feet of 30-inch pipe and laid it lower; also, took up 710 feet of 12-inch pipe and replaced it by 8-inch pipe.

REPORT OF NIGHT INSPECTORS.

NUMBER INSPECTION.	NUMBER LEAKS.	NUMBER WILLFUL WASTE.	NUMBER REPAIRED
5,330	319	443	303

WATER METERS IN USE.

At Tanneries.....	10
At Saloons, Restaurants. etc.....	70
At Breweries and Distilleries.....	11
At Factories, etc.....	57
At Dwellings and Private Buildings.....	99
At Street Railway Stables.....	5
At Railway Companies, stand pipe, etc.....	10
At Livery stables.....	49
At Landries, Dye Houses and Bakeries.....	18
At Bottling Departments.....	5
At Butcher Shops.....	32
At Flour Mills.....	2
At Malt Houses.....	5
At Hotels.....	4
At Bath Houses.....	3
At Barber Shops.....	9
At Printing Offices.....	3
At Gas Engines.....	9
At Tug Boat Offices.....	2
Total number in use.....	403

SIZE AND MAKE OF METERS SET IN 1884.

SIZE.	WORTHINGTON.	CROWN.	EQUETABLE.	TOTAL.
4 inch.....				
3 inch.....	2			2
2 inch.....	4			4
1½ inch.....	6			6
1 inch.....	19		3	22
¾ inch.....	29	1	2	32
⅝ inch.....	110		3	113
½ inch.....		3		3
	170	4	8	182

SIZE, MAKE, NUMBER AND DATE OF SETTING WATER
METERS IN USE.

SIZE.	NUMBER SET.						TOTAL.	
	WORTHINGTON.		CROWN.		EQUITABLE.			
	1876-1883.	1884	1876-1884.	1884.	1876-1883.	1884.	1876-1883.	1884.
4 inch.....	4						4	
3 inch.....	17	2	3				20	2
2 inch.....	6	4	2				8	4
1½ inch.....	17	6					17	6
1 inch.....	30	19	6			3	36	22
¾ inch.....	35	29	33	1	2	2	70	32
⅝ inch.....	42	110			14	3	56	113
½ inch.....			10	3			10	3
Total.....	151	170	54	4	16	8	221	182

METERS ON HAND DECEMBER 31, 1883.

IN GOOD CONDITION.

SIZE	WORTHING- TON.	CROWN.	EQUIEABLE.	TOTAL.
4 inch.....				
3 inch.....	2			2
2 inch.....	3			3
1½ inch.....				
1 inch.....	3	1	1	5
¾ inch.....	25	13	3	41
⅝ inch.....	2			2
½ inch.....		2		2
Total.....	35	16	4	55

METERS ON HAND BEING REPAIRED.

SIZE.	WORTHINGTON.	CROWN.	EQUITABLE.	TOTAL
3 inch.....				
2 inch.....				
1½ inch.....				
1 inch.....			2	2
¾ inch.....	1	5	4	10
⅝ inch.....	2		16	18
½ inch.....		2		2
Total.....	3	7	22	32

INVENTORY OF TOOLS AND MATERIAL.

Derrick, 14 feet	1
Derrick, 16 feet	1
Sets of Wilson's Patent Block and Chain	2
Hydrant Lever, oak.....	1
Socket Wrench for Manhole Covers.....	1
Service Stop Cock Wrenches.....	5
Ladles.....	2
Gasket Setter.....	1
Lamp Rods.....	3
Grade Pole.....	1
Set of Grappling Irons	2
Stop Cock Wrenches	7
Manure Fork	1
Crowbars	2
Furnace, Kettle and Bar	2
Ax	1
Iron Kettles.....	2
Sledges.....	2
Water Pails.....	6
Gasket Irons.....	3
Diamond Points	24
Hammers	4
Caulking Tools (sets)	2
Common Lumber, feet	1,000
Shovels.....	4
Hand Axes	2
Oil Can, 10 gal.....	1
Oil Can, 4 gal.....	1
Oil Can, 2 gal.....	1
Oil Can, 1½ gal.....	1
Collars for Hydrants.....	15
Red Lights.....	4
Hardies	3
Pigs of Lead	12
Wood Hydrant Stuffing Box Wrench.....	1
Monkey Wrench	1
Steel Chipping Hammer.....	1

Blown Hydrant Valve Screws.....	3
Screwdriver.....	1
Gasket for Seat of Hydrants	24
Set of Screw Wrenches for Stowell Hydrants.....	2
Half Round File.....	1
Clay Drain Pipe, 3-inch, feet	200
Clay Bends, 3-inch.....	5
Iron Hydrant Plugs.....	2
Guards for Hydrants.....	3
Stowell Hydrant Valves.....	15
Horse and Harness	1
Wagon	1
Sleigh	1
Rubber Boots, pairs.....	6
Stowell and Wood Hydrant Screws.....	16
Stowell Hydrant Stuffing Box Wrench.....	1
Hydrant Pumps and Hose	7
Hydrant Wrenches, steel.....	7
Marine Pump....	1
Rubber Hose, 2-inch, feet	250
Vises	2
Cross-cut Saw	1
Hand Saws.....	2
Chains.....	4
Level.....	1
Trowel.....	1
Steel Square..	1
Stowell Hydrant Stuffing Boxes	24
Grinding Stone	1
Stowell Hydrant Tops.....	4
Platform Scale, Fairbank's	1
Pressure Gauges.....	2
Service Stop Cock Coxes	61
Ratchet.....	1
Cement, barrels	4
Salt	1
Lantern.....	1
Gasking, balls	2
Stem for Stop Cock, 8-inch	1
Stem for Stop Cock, 6-inch	1
Stem for Stop Cock, 12-inch	1
Picks.....	12
Wood Hydrant Waste Valves.....	3
Truck	1
Bushel Baskets	2
Oak Frames	12
Lead Pipe, ¾-inch, feet	50
Lead Pipe, 1-inch, feet	8
Iron Pipe, ¾-inch, feet.....	12
Iron Pipe, 1-inch, feet	5

Padlocks	60
Hasps	116
Grip Wrenches	2
Chain Tong	1
Pipe Cutter	1
Elbows, $\frac{3}{8}$ -inch	4
Elbows, $\frac{1}{2}$ -inch	16
Elbows, $\frac{3}{4}$ -inch	10
Elbows, 1-inch	10
Elbow, $1\frac{1}{2}$ -inch	1
Elbows, 2-inch	3
T's, $\frac{3}{8}$ -inch	3
T's, $\frac{1}{2}$ -inch	4
T's, $\frac{3}{4}$ -inch	2
Nipples, $\frac{3}{8}$ -inch	4
Nipples, $\frac{1}{2}$ -inch	32
Nipples, $\frac{3}{4}$ -inch	12
Nipples, 1-inch	3
Nipples, $1\frac{1}{2}$ -inch	3
Nipples, 2-inch	2
Bushings, 1-inch	4
Bushings, $\frac{1}{2}$ -inch	75
Bushings, $\frac{3}{4}$ -inch	80
Unions, $\frac{1}{2}$ -inch	9
Unions, $\frac{3}{4}$ -inch	5
Unions, 1-inch	6
Couplings, straight, $\frac{1}{2}$ inch	7
Couplings, straight, $\frac{3}{4}$ inch	6
Couplings, straight, $\frac{3}{4}$ inch	4
Couplings, straight, 1 inch	5
Couplings, straight, $1\frac{1}{2}$ inch	1
Couplings, straight, 2 inch	2
Couplings, bent, $\frac{3}{4}$ inch	22
Couplings, bent, 1 inch	32
Guide and Dies, $\frac{3}{8}$ inch	1
Guide and Dies, $\frac{1}{2}$ inch	1
Guide and Dies, $\frac{3}{4}$ inch	1
Guide and Dies, $\frac{3}{4}$ inch	1
Guide and Dies, 1 inch	1
Gasoline Stove	1
Hydrant Wrenches, for Sprinkling	40

Respectfully submitted,

CHAS. J. TRAPSCHUH,

Superintendent of Distribution.

CITY ENGINEER'S OFFICE,
MILWAUKEE, FEBRUARY 11, 1885. }

G. H. BENZENBERG, ESQ., *City Engineer.*

I herewith submit statements of disbursements, and cost of maintenance and construction of Water Department; also showing streets in which water mains have been laid, water gates and hydrants set, and other statements for the year ending December 31, 1884.

H. W. WHITE,
Bookkeeper.

STATEMENT,

Showing disbursements of Water Department from January 1st to
December 31st, 1884.

MAINTENANCE ACCOUNT.

NORTH POINT ENGINES.

Coal.....	\$25,828 81	
Packing and gasket	153 08	
Lard, castor, headlight and machine oil.....	539 32	
Cotton waste, globe valves, gauge glasses, pipe, copper, nuts, bolts, hose, etc.....	486 29	
Boiler compound, files, emery cloth, lead, iron, etc.....	294 44	
Repairing engines and boilers.....	3,537 56	
Gas	441 48	
Clearing ice from crib.....	436 17	
Pay of Engineers, oilers, firemen, etc.....	12,439 80	
		<hr/> \$44,156 95

NORTH POINT PUMP WORKS.

Pay of carpenter and yardman	\$1,027 10	
Time of men working on grounds.....	43 50	
Nails, glass, locks, hose, brushes, etc	88 79	
Repairs on approach pier.....	835 10	
Repairing scales, painting tower, etc.....	35 98	
		<hr/> \$2,030 47

MACHINE SHOP NORTH POINT.

Wrenches, files, drills, taps, coal, chain tongs, etc	\$111 89	
		<hr/> \$111 89
Amount forward.....		<hr/> \$46,299 31

BOARD OF PUBLIC WORKS.

203

Amount forward..... \$46,299 31

WEST SIDE ENGINES.

Coal and wood.....	\$1,669 21	
Lard, castor and headlight oil.....	247 28	
Packing, gasket, waste, iron, emery cloth. etc.....	154 16	
Gas.....	186 94	
Repairing engines and boilers.....	126 19	
Pay of engineers and firemen.....	4,901 38	
Recording gauge.....	100 00	
	<hr/>	\$7,385 16

WEST SIDE PUMP WORKS.

Nails, hooks, glass, lumber and pails.....	\$39 68	
Time of carpenters and men on grounds.....	91 40	
Painting stand pipe and repairing roof.....	22 98	
	<hr/>	154 06

RESERVOIR.

Pay of keeper and watchman.....	\$1,320 00	
Repairing reservoir bottom.....	7,880 77	
Nails, oil, coal, brooms, painting gate house, etc.....	208 15	
Pay of laborer.....	471 00	
	<hr/>	9,879 92

NORTH STREET BRIDGE.

Pay of day and night-man.....	\$960 00	
	<hr/>	960 00

DISTRIBUTION.

Repairing indicators.....	\$125 10	
Repairing hydrants, new, and repairing old tools.....	107 69	
Night inspection and watching waste of water.....	1,280 40	
Shoeing horses, oats, corn, hay, repairing wagon, etc.....	202 42	
Drain pipe, lumber, lead, stop box frames, etc.....	745 03	
Hose, manure, coal shovels, rubber boots, 3 and 4-inch gates, iron boxes, etc.....	613 66	
Taking up and relaying pipe, N. Pt.....	294 42	
Pay of superintendent, hydrant inspectors, etc.....	7,057 83	
	<hr/>	10,426 55
Amount forward.....		\$75,290 00

Amount forward		\$75,290 00
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TELEPHONE LINE.

Rent of telephone	185 00	
	<hr/>	185 00

COLLECTOR'S OFFICE.

Time of men turning on and off water	\$927 18	
Postal cards, stamps, blank books, etc.	658 24	
Pay of janitor	96 00	
Pay of collector, assessor, etc.	7,519 94	
	<hr/>	\$9,181 36

WATER METERS.

Taking off, setting and repairing meters	\$2,576 72	
Saw dust, fittings, lead pipes, nails, etc.	416 97	
Meter boxes	163 02	
Meters	4,515 81	
Freight on meters	25 96	
	<hr/>	\$7,698 48

FERRULES AND BOXES.

Time of tapper and assistant	\$1,142 50	
Ferrules	681 55	
Horse and wagon for tapper	229 13	
Taps, deis, repairing tools, etc.	163 08	
	<hr/>	\$2,216 26

WATER RATES.

Water rates refunded	\$28 75	
	<hr/>	\$28 75
Total maintenance		<hr/>
		\$94,414 85

CONSTRUCTION ACCOUNT.

EXTENSION DISTRIBUTION.

Water pipe and castings.....	\$42,804 58	
Laying pipe and inspection.....	15,617 75	
Hydrants.....	2,533 44	
Water gates	1,824 00	
Water gate boxes.....	557 30	
Hauling water pipe	1,128 70	
Inspecting water pipe.	286 50	
New fire hydrants	5,771 22	
Water pipe assessment refunded.....	108 86	
Pay of keeper, yard, laborers, etc.....	1,017 20	
	<hr/>	71,649 55

PUMPING ENGINE, WEST SIDE.

Engine and foundation.....	\$10,277 15	
Changing front door, vestibule, steps, etc.....	553 10	
Lumber, relaying floor, changing gas fixtures, etc	238 01	
	<hr/>	11,068 26

NORTH POINT WORKS.

Sewer, grading grounds, making roadway, etc.....	\$10,334 50	
New dock and stone filling	3,758 44	
Lowering pipe	622 60	
Gate for inlet	45 00	
Boiler house, coal shed, chimney and iron roof.....	21,819 80	
	<hr/>	36,580 34
Amount forward		<hr/> \$119,298 15

Amount forward	\$119,298 15
----------------------	--------------

RESERVOIR.

New gate house	\$848 00	
	<hr/>	848 00

TUNNEL INTAKE.

Submarine survey and use of tug.....	\$78 80	
	<hr/>	78 80
Construction account	\$120,224 95	
	<hr/>	
Maintenance account.....	\$94,414 85	
Construction.....	120,224 95	
	<hr/>	
Total for 1884	\$214,639 80	

STATEMENT

Of the Actual Cost of Maintenance and Construction of Water
Department from January 1st to December 31st, 1884.

PUMPING ENGINES, NORTH POINT.

Dr.

To cash expenditures.....	\$44,156 95
To stock on hand January 1, 1884.....	9,463 31
To Machine shop, repairing engines	226 97
	<hr/>
	\$53,847 23

Cr.

Time engineer and helper in machine shop	\$255 67
Stock on hand December 31, 1884.....	6,815 12
	<hr/>
	7,070 79
	<hr/>
	\$46,776 44

NORTH POINT WORKS.

To cash expenditures.....	\$2,030 47
	<hr/>
	2,030 47

MACHINE SHOP, NORTH POINT.

Dr.

To time machinist and helper.....	\$255 67
To cash expenditures.....	111 89
	<hr/>
	\$367 56

Cr.

By work for distribution	\$11 20
By work for repairing North Point engines.....	226 97
	<hr/>
	238 17
	<hr/>
	129 39
	<hr/>
Amount forward.....	\$48,936 30

ANNUAL REPORT OF THE

Amount forward.....		\$48,936 30
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PUMPING ENGINES, WEST SIDE.

Dr.

To cash expenditures	\$7,385 16
To stock on hand January 1, 1884.....	699 26
	<hr/>
	\$8,084 42

Cr.

By stock on hand December 31, 1884.....	\$895 34	
	<hr/>	\$7,189 08

PUMPING WORKS, WEST SIDE.

Dr.

To cash expenditures.....	\$154 06	
	<hr/>	154 06

DISTRIBUTION.

Dr.

To cash expenditures.....	\$12,642 81
To service boxes on hand January 1, 1884	133 60
To Ferrules on hand January 1, 1884.....	284 20
To machine shop work done	11 20
	<hr/>
	\$13,071 81

Cr.

By cash for ferrules, boxes and branch connections	\$5,223 67	
By boxes on hand December 31, 1884	96 00	
By ferrules on hand December 31, 1884	212 15	
	<hr/>	\$5,531 82
		\$7,539 99

WATER METERS.

Dr.

To cash expenditures.....	\$7,698 48
To meters on hand January 1, 1884	1,576 20
	<hr/>
	\$9,274 68

Cr.

By cash for meter rents and meters sold.....	\$1,939 92	
By meters on hand December 31, 1884	2,055 78	
	<hr/>	3,995 70
	<hr/>	\$5,278 98

Amount forward.....		\$69,098 41
---------------------	--	-------------

BOARD OF PUBLIC WORKS.

209

Amount forward \$69,098 41

NORTH STREET BRIDGE.

To cash expenditures..... \$960 00
 ----- 960 00

COLLECTOR'S OFFICE.

To cash expenditures..... \$9,181 36
 ----- \$9,181 36

TELEPHONE LINE.

To cash expenditures..... \$185 00
 ----- \$185 00

WATER RATES.

To cash expenditures..... \$28 75
 ----- \$28 75

RESERVOIR.

Dr.

To cash expenditures..... \$9,879 92

Cr.

By cash for grass..... \$81 00
 ----- \$9,798 92

Total cost..... \$89,252 44

CONSTRUCTION ACCOUNT.

EXTENSION DISTRIBUTION.

Dr.

To cash expenditures.....	\$71,649 55	
To stock on hand January 1, 1884	6,737 66	
	<hr/>	\$78,387 21

Cr.

By stock on hand December 31, 1884.....	\$10,538 45	
	<hr/>	\$10,538 45
		<hr/>
		\$67,848 76

PUMPING ENGINE, WEST SIDE.

To cash expenditures.....	\$11,068 26	
	<hr/>	\$11,068 26

NORTH POINT WORKS.

To cash expenditures.....	\$36,580 34	
	<hr/>	\$36,580 34

RESERVOIR.

To cash expenditures.....	\$848 00	
	<hr/>	\$848 00

TUNNEL INTAKE.

To cash expenditures.....	\$78 80	
	<hr/>	\$78 00

Total cost.....		<hr/>
		\$116,424 16

WATER PIPE LAID IN YEAR 1884.

EAST SIDE.

STREET.	FROM	To.	6-IN.	8-IN.	12-IN.
			FEET.	FEET.	FEET.
Astor	Brady	Highland Place	808	.....	.....
Broadway	S. line Mason	S line Wisconsin, replac'd 6-inch pipe.	.....	.....	460
Highland Place	Astor	Racine	412	.....	.....
Chicago	Milwaukee	Jefferson	324	.....	.....
Farwell Ave.	Irving Place	North Ave.	1,825	.....	.....
Ogden	Market	Milwaukee	677	.....	.....
Murray Ave.	North	Bellevue Pl.	2,331	.....	.....
North Ave.	Murray	Farwell			
Total			6,377	.....	460

WEST SIDE.

STREET.	FROM	To	6-IN. FEET.	8-IN. FEET.	12-IN. FEET.
Fowler	E. line Kneeland ad.	Tenth .....	.....	.....	332
Buffum.....	Lee	Centre .....	.....	2,013	.....
Centre	Buffum	Thirteenth Dist. School	36	1,041	.....
Prairie	Fourth	West Side Pump Works	.....	.....	5,790
Lloyd	Fifth	Seventh.....	765	.....	.....
Fifth	Beaubian	Centre	3,155	.....	.....
Ninth	Vliet	Mill.....	420	.....	.....
Vliet	Twentieth	Twenty-first	386	.....	.....
Holton	North ave.	Lee	702	.....	.....
Booth	North ave.	Lee	734	.....	.....
North ave	Holton	Booth	342	.....	.....
Queen Ann Place.....	Wells	Cedar	467	.....	.....
Seventeenth	State	Chestnut	921	.....	.....
Nineteenth	State.....	Chestnut	921	.....	.....
Twentieth	State.....	Chestnut	952	.....	.....
Second.....	North ave.	Wright.....	1,328	.....	.....
First	Reservoir ave.	Lloyd	785	.....	.....
Cedar	Twenty-fourth	Twenty-fifth	549	.....	.....
Twenty-fifth	Cedar	State.....	.....	629	.....
Thirteenth.....	Fond du Lac ave....	Sherman	334	.....	.....
Prairie	Sixteenth	Eighteenth.....	668	.....	.....
Mill.....	Tenth	Eleventh	521	.....	.....
Eleventh	Walnut	Sherman .....	.....	457	.....
Eleventh	Garfield ave.....	Lloyd .....	.....	501	.....
Lloyd	Tenth	Eleventh	412	.....	.....
Cold Spring ave.....	Twentieth	Twenty-first.....	389	.....	.....
Twenty-first	Cold Spring ave....	Vliet.....	516	.....	.....
Booth.....	Garfield ave.....	Lloyd	540	.....	.....
Twentieth.....	State.....	Cedar.....	582	.....	.....
Wells	Twenty-sixth	Twenty-seventh	413	.....	.....
Sherman	Eleventh.....	Twelfth	378	.....	.....
Seventh	Walnut.....	Galena.....	432	.....	.....
State.....	Twenty-fourth	Twenty-fifth	562	.....	.....
Total.....			18,210	4,641	6,122

SOUTH SIDE.

STREET.	FROM.	To	6-IN.	8-IN.	12-IN.
			FEET.	FEET.	FEET.
Third Avenue	Mineral	National Avenue	667	.....	.....
Mitchell	Sixth Avenue	Muskego Avenue .....	.....	3,326	.....
Forest Home Avenue ..	Mitchell	Tenth Ave	1,115	.....	.....
Fourth Avenue	Railroad	Mitchell	1,745	.....	.....
Railroad	Sixth Avenue	Muskego Avenue .....	.....	2,181	.....
Nineteenth Avenue ...	National.	Pt, 215 feet N	227	.....	.....
Scott	Sixth Avenue	Seventh Avenue	363	.....	.....
Second Avenue	Scott	Madison	351	.....	.....
Mineral	Sixth Avenue	Eleventh Avenue	2,087	.....	.....
National Avenue	Reed	Clinton .....	.....	.....	356
Washington	Greenbush	First Avenue .....	.....	734	.....
Maple	Kinnickinnic Avenue .	Grove	1,803	.....	.....
Total			8,358	6,241	356

STATEMENT

Showing amount of water pipe laid to December 31st, 1884.

PIPE LAID IN 1884.	SIZE OF PIPE—INCHES.							Total feet laid.	Total miles.
	36	30	24	20	16	12	8	6	
East Side.....								6,377	1.208
West Side.....						6,122	4,641	18,210	5.487
South Side.....						356	6,241	8,358	2.832
Total.....						6,478	10,882	32,945	9.527
PIPE LAID PREVIOUS TO 1884.									
East Side.....	1,969	3,871		12,932	2,925	6,499	22,736	95,675	27.763
West Side.....		13,466	680	3,327		21,017	38,104	195,329	51.499
South Side.....				3,661	1,560	15,520	24,085	68,061	21.378
Total Cast Iron Pipe.....	1,969	17,377	680	19,920	4,485	49,514	95,807	581,722	110.167
Wrought Iron Pipe.....		578						578	.109
Flexible Joint Pipe.....	2,075			564	480	251		3,370	.642
Total Amount of Pipe.....								585,670	110.918

† Replacing 6-inch pipe.

* Replaced by 12-inch pipe.

WATER GATES SET IN YEAR 1884.

EAST SIDE.

STREET.	LOCATION.	6-INCH.	8-INCH.	12-INCH.
Highland Place	W line Racine street.....	1	.....	.....
Ogden	W line Milwaukee street.....	1	.....	.....
Broadway.....	N line Wisconsin street.....	.....	.....	1
Murray Avenue	N line North ave	1	.....	.....
Took out 12-inch gate	on line of pipe to Auxiliary Pump at North	.....	1	.....
Point Works and	replaced with 8-inch gate.....			
Total. ....	.....	3	1	1

WEST SIDE.

STREET.	LOCATION.	6-INCH.	8-INCH.	12-INCH.
Prairie	9 feet W of W line Fourth.....	I		
Prairie	29 feet E of W line Fourth			I
Fifth	N line Garfield ave.....	I		
Fifth	S line Centre	I		
Lloyd	W line Fifth	I		
Queen Ann Place	N line Wells.....	I		
Nineteenth	N line State	I		
Nineteenth	S line Chestnut	I		
Seventeenth	N line State	I		
Seventeenth	S line Chestnut	I		
Twentieth	S line Chestnut	I		
Ninth	S line Mill.....	I		
Booth	N line North ave	I		
Holton	N line North ave	I		
Buffam	S line Centre		I	
Buffam	N line Centre.....		I	
Centre.....	W line Buffam		I	
Thirteenth.....	E line Fond du Lac ave.....	I		
Changed 6-inch gate	from Cedar E line 24th to Cedar E line 25th.....			
Eleventh	S line Garfield ave.....		I	
Lloyd	E line Eleventh.....	I		
Sherman	N W line Eleventh.....	I		
Seventh	S line Walnut street	I		
Mill	N line Vliet street	I		
Prairie	W line Sixteenth	I		
Prairie	E line Eighteenth	I		
Wells.....	E line Washington ave.....	I		
State	E line Twenty-fifth	I		
West Side Pump	Works on force main.....			2
Vliet.....	E line Eighteenth.....	I		
West Side Pump	Works on intake pipe.....			I
Vliet	W line Eighteenth	I		
Total.....		24	4	4

SOUTH SIDE.

STREET.	LOCATION.	6-IN.	8-IN.	12-IN.
Scott	W line of Sixth ave	1		
Mineral	W line of Sixth ave	1		
Mineral	E line of Eleventh ave	1		
Nineteenth	N line of National ave	1		
Fourth	S line of Railroad	1		
Fourth	N line of Mitchell	1		
Washington	E line of First ave		1	
Mitchell	W line of Sixth ave		1	
Mitchell	E line of Eleventh ave		1	
Mitchell	W line of Eleventh ave		1	
Forest Home ave ..	Intersection Mitchell	1		
Railroad	E line of Eleventh ave		1	
Railroad	W line of Eleventh ave		1	
Railroad	W line of Sixth ave		1	
Eleventh ave	N line of Railroad			1
Walker	W line of Sixth ave	1		
Total		8	7	1

SUMMARY OF WATER GATES.

	6-IN.	8-IN.	12-IN.	16-IN.	20-IN.	24-IN.	30-IN.	36-IN.
East Side	130	25	5	2	8	.....	3	3
West Side	245	45	26	.....	4	2	4	.....
South Side.....	101	27	13	2	2	.....	.....	.....
Total.....	476	97	44	4	14	2	7	3

WATER GATES

Set on line of pipe leading to hydraulic elevators, public buildings, etc.,
during year 1884.

	3-IN.	4-IN.
A. Conro, Broadway.....		I
J. H. Van Dyke, Ferry.....	I	
Fischer & Sons, No. 221 Second		I
A. Heller, Astor.....		I
Republican House, Third.....		I
St. Paul's Church, Knapp.....		I
Caswell Estate, No. 199 West Water.....	I	
Convent, Milwaukee.....		I
Reedeburg & Co., Menomonee.....	I	
Roundy, Peckham & Co., Buffalo		I
H. Haertel, Clybourn.....		I
Republican House, Cedar		I
Daisy Flour Mill, Third	I	
Branch No. 99 changed from 3-inch to 4-inch gate (Broadway)		I
Branch No. 172 changed from 3-inch to 4-inch gate (Third)		I
Total.....	4	II

RECAPITULATION.

	3-IN.	4-IN.	6-IN.
Number set during 1884.....	4	11	.....
Less 2 3-inch changed 121 2			
Number set previous to 1884, less two 3-inch changed 119	119	89	6
Total.....	123	100	6

BRANCH CONNECTIONS.

Statement showing size and number of branch connections put in
during the year 1884.

3-inch	3
4-inch	10
	<hr/>
	13

Statement showing size and number of branch connections inserted from
August 21st, 1872 to December 31st, 1884.

2-inch	3
2½-inch	1
3-inch	141
4-inch	75
6-inch	20
8-inch	1
	<hr/>
Total	241

HYDRANTS SET 1884.

EAST SIDE.

N E corner Astor and Hamilton streets.
 N E corner Highland place and Astor street.
 N E corner Racine street and Highland place.
 N E corner Chicago and Milwaukee streets.
 N E corner Chicago and Jefferson streets.
 N E corner Ogden and Market streets.
 N E corner Farwell ave and Windsor place.
 N E corner Farwell ave and Kenilworth place.
 N E corner Farwell and North avenues
 N E corner Murray ave and Thomas street.
 N E corner Murray ave and Bradford street.
 N E corner Murray ave and Bellevue place
 Corner Oneida and River streets, changed to double nozzle.
 Corner Market and Oneida streets, changed to double nozzle.
 Corner Erie and Oregon streets, changed to double nozzle.
 Milwaukee, N line Johnson streets, double nozzle, new.
 Market, between Division and Johnson streets, double nozzle, new.
 Market, between Division and Knapp streets, double nozzle, new.
 Buffalo, between East Water and Broadway, double nozzle, new.
 Corner Broadway and Menomonee streets, double nozzle, new.
 East Water, between Wisconsin and Mason streets, double nozzle, new.
 East Water, between Wisconsin and Michigan streets, double nozzle, new.
 East Water, between Michigan and Huron streets, double nozzle, new.
 Detroit, between East Water and Broadway, double nozzle, new.
 East Water, between Huron and Detroit streets, double nozzle, new.
 East Water, between Buffalo and Chicago streets, double nozzle, new.
 Chicago, between East Water and Broadway, double nozzle, new.
 Mason street, between East Water and Broadway, double nozzle, new.
 East Water and Oneida streets, changed to double nozzle, new.
 Market Square, between Mason and Oneida streets, double nozzle, new.
 Division, between North Water and East Water streets, double nozzle, new.
 North Water, between Division and Knapp streets, double nozzle, new.

Division, between East Water and Market streets, double nozzle, new.
 Broadway, between Knapp and Ogden streets, double nozzle, new.
 Broadway, between Johnson and Division streets, double nozzle, new.
 Michigan, between Milwaukee and Jefferson streets, double nozzle, new.
 Huron, between Broadway and Milwaukee street, double nozzle, new.
 Wisconsin, between Broadway and Milwaukee street, double nozzle, new.
 Wisconsin, between Broadway and East Water street, double nozzle, new.
 Knapp, between Milwaukee and Jefferson streets, double nozzle, new.
 Milwaukee, between Knapp and Ogden streets, double nozzle, new.
 Buffalo, between Milwaukee street and Broadway, double nozzle, new.
 Mason, between Milwaukee street and Broadway, double nozzle, new.
 Wisconsin, between Milwaukee and Jefferson streets, double nozzle, new.
 North Water, between Market street and Broadway, double nozzle, new.
 North Water, between Milwaukee and Pleasant streets, double nozzle, new.
 Buffalo, between Van Buren and Jackson streets, double nozzle, new.
 East Water and Michigan streets, changed to double nozzle, new.
 Broadway and Michigan street, changed to double nozzle, new.

WEST SIDE.

N E corner Fifth and North streets.
 N E corner Fifth and Lee streets.
 N E corner Fifth and Wright streets.
 N E corner Fifth and Clark streets.
 N E corner Fifth and Centre streets.
 N E corner Second and Wright streets.
 N E corner Second and Lee streets.
 S E corner Queen Ann Place and Cedar street.
 N E corner Seventeenth and Prairie streets.
 N E corner Twentieth and Prairie streets.
 N E corner Booth street and North avenue.
 N E corner Holton street and North avenue.
 N E corner Holton and Lee streets.
 N E corner Twenty-first and Vliet streets.
 N E corner First and Harmon streets.
 N E corner First and Lloyd streets.
 N E corner Buffum and Wright streets.
 N E corner Buffum and Clark streets.
 N E corner Buffum and Centre streets.
 N E corner Richards and Centre streets.
 N E corner Centre street and Island avenue.
 N E corner Thirteenth and Sherman streets.
 N E corner Twenty-fifth and Cedar streets.
 N E corner Twenty-fifth and State streets.
 N E corner Fowler and Tenth streets.
 N E corner Eleventh and Lloyd streets.
 N E corner Lloyd and Tenth streets.
 N E corner Eleventh and Sherman streets.
 N E corner Booth and Lloyd streets.

N E corner Cold Spring avenue and Twentieth streets.
 N E corner Cold Spring avenue and Twenty-first street.
 Changed hydrant from Cedar and Twentieth to N E corner Twentieth and Cedar.
 N E corner Wells and Twentieth streets.
 N E corner State street and Hawley Place.
 Corner Ninth street and Grand avenue, changed to double nozzle, new.
 Corner Tenth and Clybourn streets, changed to double nozzle, new.
 Corner Eleventh and Clybourn streets, changed to double nozzle new.
 Corner Twelfth and Clybourn streets, changed to double nozzle, new.
 Second, between Grand avenue and Sycamore street double nozzle, new.
 Second, between Grand avenue and Wells street, double nozzle, new.
 Corner West Water and Sycamore streets, changed to double nozzle, new.
 West Water, between Grand ave. and Sycamore street, double nozzle, new.
 West Water, between Grand ave. and Wells street, double nozzle, new.
 Cedar, between Third and Fourth streets, double nozzle, new.
 Grand avenue, between West Water and Second streets, double nozzle, new.
 Grand avenue, between Second and Third streets, double nozzle, new.
 Second and Cherry streets, changed to double nozzle.
 Third and Vliet streets, changed to double nozzle.
 Third, between Poplar and Chestnut streets, double nozzle, new.
 Tenth, between Chestnut street and Cold Spring ave., double nozzle, new.
 Wells, between Twenty-first and Twenty-second streets, double nozzle, new.
 Wells, between Twentieth and Twenty-first streets, double nozzle, new.

SOUTH SIDE.

N E corner Scott street and Seventh ave.
 N E corner Mineral street and Eighth ave.
 N E corner Mineral street and Tenth ave.
 Nineteenth ave., 215 feet N of National ave.
 N E corner Fourth ave and Orchard street.
 N E corner Fourth ave and Lapham street.
 N E corner National ave and Reed street.
 N W corner Mitchell street and Seventh ave.
 N E corner Mitchell street and Eighth ave.
 N E corner Mitchell street and Ninth ave.
 N E corner Mitchell street and Tenth ave.
 N E corner Mitchell street and Bismark ave.
 N E corner Mitchell street and Eleventh ave.
 N E corner Mitchell street and Twelfth ave.
 N E corner Mitchell street and Thirteenth ave.
 N E corner Mitchell and Pearl streets.
 N E corner Mitchell street and Muskego ave.
 N E corner Forest Home and Tenth avenues.
 N E corner Forest Home and Ninth avenues.
 N E corner Maple and Reed streets.
 N E corner Maple and Hanover streets.
 N E corner Maple and Greenbush streets.

N E corner Railroad street and Seventh ave.
N E corner Railroad street and Eighth ave.
N E corner Railroad street and Ninth ave.
N E corner Railroad street and Tenth avenue.
N E corner Railroad street and Bismark avenue.
Corner Virginia street and Second avenue, changed to double nozzle.
Corner Virginia street and Third avenue, changed to double nozzle.
Best Brewing Co., changed to double nozzle.
Corner Oregon and Reed streets, changed to double nozzle.
Corner Park street and Fourteenth avenue.

RECAPITULATION.

EAST SIDE.

Common hydrants set	12	
Double nozzle hydrants set	31	
	<hr/>	43

WEST SIDE.

Common hydrants set.....	33	
Double nozzle hydrants set.....	11	
	<hr/>	44

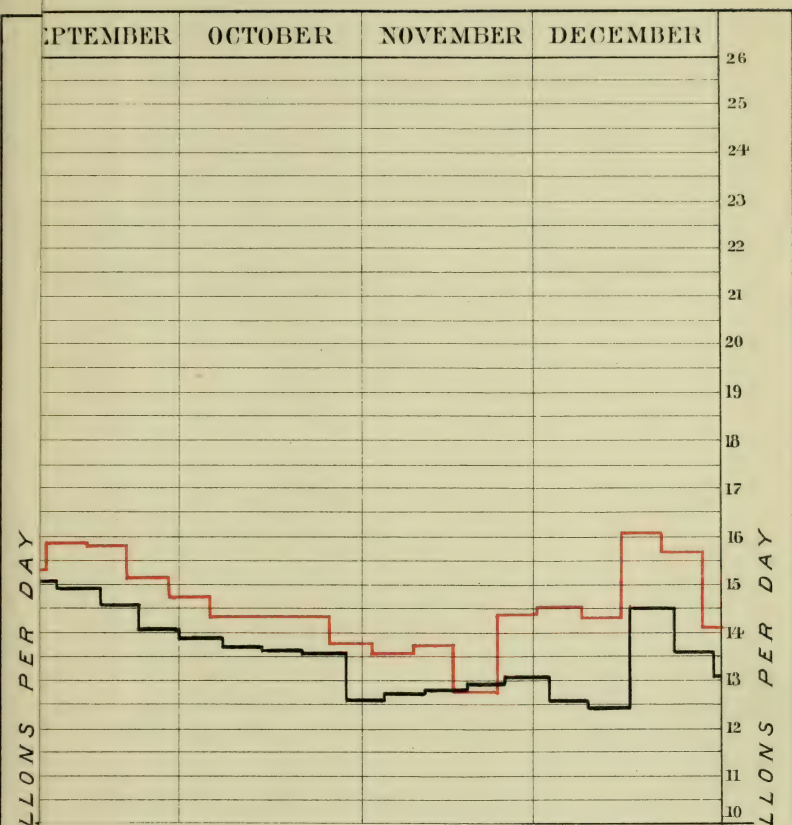
SOUTH SIDE.

Common hydrants set.....	27	
No. of hydrants set in 1884	114	
No. of hydrants set previous to 1884.....	806	
	<hr/>	
Total		920

HYDRANTS CHANGED TO DOUBLE NOZZLE.

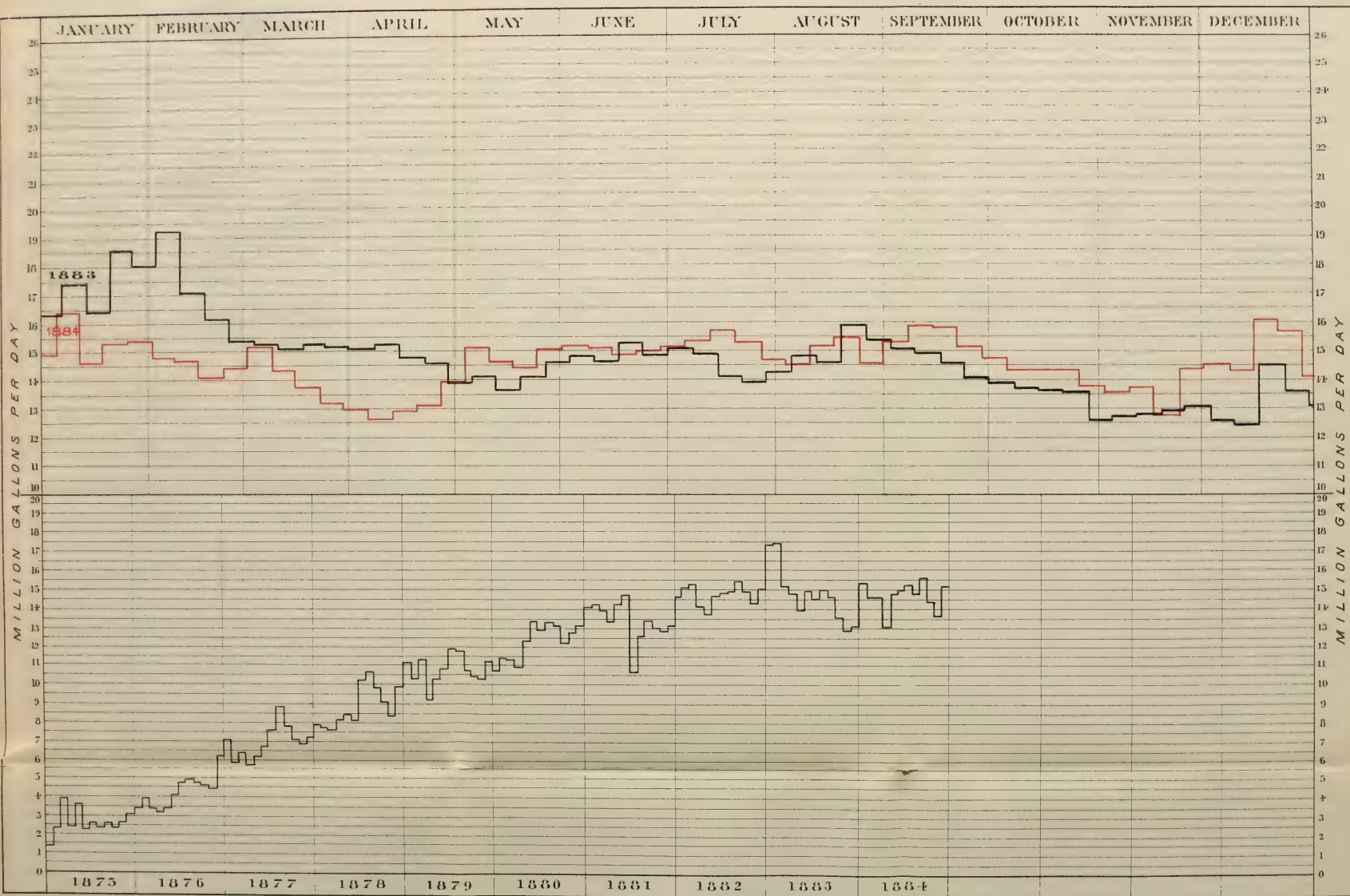
East Side.....	6
West Side	7
South Side	5

ion



MILWAUKEE WATER WORKS

Diagram, Showing the average daily Consumption
Per Week and per Month.



REPORT
OF THE
COLLECTOR OF WATER RATES
FOR THE YEAR
1884.

REPORT OF THE COLLECTOR OF WATER RATES.

OFFICE OF THE COLLECTOR OF WATER RATES, }
Milwaukee, February 9, 1885. }

To the Honorable the Board of Public Works:

GENTLEMEN—I herewith submit the within report, being the annual statement of the Office of the Collector of Water Rates of the city of Milwaukee, for the year ending December 31, 1884.

Respectfully,

F. EISSFELDT, *Collector.*

STATEMENT

For the year ending December 31, 1884.

Balance cash on hand January 1, 1884		\$811 32
Water Rates—		
Regular rates of 1883 uncollected January 1, 1884.....	\$2,356 45	
Fractional rates of 1883 uncollected January 1, 1884.....	26 00	
Regular rates assessed for the year 1884.....	\$134,113 08	
Fractional rates assessed for the year 1884.....	7,234 05	
Metered rates assessed for the year 1884.....	67,799 97	
Miscellaneous	2,212 90	
	<hr/>	211,360 00
Street sprinkling	\$8,531 75	
Fire hydrants	18,400 00	
	<hr/>	26,931 75
	<hr/>	238,291 75
Construction Account—		
Branch connections of 1882 uncollected January		
1, 1884	\$267 96	
Branch connections of 1883 uncollected January		
1, 1884	165 17	
Branch connections for 1884	702 00	
Laying pipe for extension of branch connections		
for 1884	75 72	
Repairing meters and indicators, 1884	24 20	
	<hr/>	\$1,235 05
Ferrules and tapping	4,351 00	
Stop cock boxes sold	15 75	
Meter rents.....	507 52	
Meters sold.....	1,432 40	
Indicators sold.....	55 00	
Scrap iron of 1883 uncollected January 1, 1884	\$30 00	
Scrap iron for year 1884	91 17	
	<hr/>	121 17
Grass sold.....	81 00	
Street sprinkling certificates on hand January 1, 1884	35 09	
Fines and penalties	561 67	
	<hr/>	8,395 65
	<hr/>	\$249,881 17

Amount forward		\$249,881 17
Deposited with City Treasurer	\$213,582 75	
Delinquent Water Rates of 1883—Returned to Comptroller October 30, 1884—Regular rates.....	\$2,105 53	
Fractional rates.....	25 00	
		2,130 53
Delinquent Water Rates of 1884—Returned to Comptroller October 30, 1884—Regular rates.....	\$2,038 58	
Fractional rates.....	16 52	
		2,040 10
Deductions allowed on water rates of 1883, uncollected Jan. 1, 1884.		60 80
Deductions allowed on water rates of 1884—		
Regular rates	\$894 80	
Fractional rates	408 79	
		1,303 59
Metered rates of 1883 uncollected.....		483 14
Deductions allowed on Construction Account, January 1, 1884		16 98
Cash refunded for water rates.....	\$66 38	
Building permits	4 50	
Sewer permits.....	2 90	
Ferrules	12 00	
Penalties	3 18	
		88 96
Street sprinkling department credit	\$8,531 75	
Fire hydrant department credit	18,400 00	
		\$26,931 75
Street sprinkling certificates on hand		35 09
Construction Account—		
Branch connections of 1882 uncollected Dec. 31, 1884.....		225 59
Water rates of 1884 uncollected Dec. 31, 1884.		
Regular rates.....		2,180 39
Fractional rates.....		76 58
Metered rates		165 78
		\$249,322 03
Balance cash on hand Dec. 31, 1884.....		\$559 14

Cash Statement for the year ending December 31, 1884.

Balance on hand January 1, 1884		811 32
Cash for Regular water rates.....	\$136,033 34	
Meter water rates.....	67,151 05	
Miscellaneous water rates	2,212 90	
Fine and penalties	561 67	
Construction account.....	992 48	
Meters sold.....	1,432 40	
Indicators sold.....	55 00	
Grass sold.....	81 00	
Stop-cock boxes sold	15 75	
Scrap iron.....	121 17	
Meter rents.....	507 52	
Ferrules and tapping	4,351 00	
	<hr/>	213,515 28
		<hr/>
		214,326 60
Cash deposited with City Treasurer.....	\$213,582 75	
Cash refunded for water rates paid twice.....	95 75	
Cash refunded for water rates overcharged.....	66 38	
Cash refunded for building permits.....	4 50	
Cash refunded for sewer permits.....	2 90	
Cash refunded for ferrules.....	12 00	
Cash refunded for penalties.....	3 18	
	<hr/>	22 58
	<hr/>	213,767 46
		<hr/>
Balance cash on hand December 31, 1884.....		559 14

Exhibit of Water Rates for the years 1883 and 1884.

WATER RATES FOR THE YEAR ENDING	DEC. 31, 1883.	DEC. 31, 1884.
Regular and Special Water Rates.....	\$182,284 87	\$209,147 10
Street Sprinkling and Miscellaneous Water Rates	10,276 03	10,744 65
Water for Fire Hydrants... ..	16,120 00	18,400 00
Total.....	\$208,680 90	\$238,291 75
Increase for 1884.....		29,610 85

Exhibit of total Water Rates and yearly increase of same.

YEAR.	ANNUAL AMOUNT OF WATER RATES.	INCREASE.
1874.....	\$27,155 90	.....
1875.....	54,720 59	\$27,564 60
1876.....	77,050 56	22,329 66
1877.....	91,277 58	14,227 03
1878.....	103,074 13	11,796 55
1879 (including fire hydrants, \$13,460 00).....	135,015 21	21,194 08
1880 (including fire hydrants, 14,320 00)	152,223 26	17,218 05
1881 (including fire hydrants, 14,920 00).....	175,526 20	23,292 94
1882 (including fire hydrants, 15,880 00).....	198,294 08	22,767 88
1883 (including fire hydrants, 16,120 00).....	208,680 90	10,386 82
1884 (including fire hydrants, 18,400 00).....	238,291 75	29,610 85

Branch Connections.

During the year ending December 31, 1884, there were 13 branch connections made for the following purposes:

To supply Hydraulic elevators.....	6
Hydraulic motors.....	1
Factories.....	1
Hotels.....	1
Stores.....	1
Flour mills.....	1
Fire purposes.....	2
<hr/>	
Total.....	13

Hydraulic Elevators.

The total number of hydraulic elevators connected with city mains to December 31...	134
Number of hydraulic elevators in use.....	122
Number of hydraulic elevators not in use.....	12
<hr/>	134
Number of hydraulic elevators with indicators attached.....	127
Number of hydraulic elevators without indicators.....	7
<hr/>	134

Ferrules.

Total number of ferrules inserted in water main for year ending December 31, 1884:

SIZE.	NUMBER.
3/8-inch.....	8
1/2-inch.....	535
5/8-inch.....	333
3/4-inch.....	86
<hr/>	
Total.....	962

Total number of ferrules inserted in water main from September 4, 1872, to December 31, 1884:

SIZE.	NUMBER.
3/8-inch.....	1,308
1/2-inch.....	6,408
5/8-inch.....	2,784
3/4-inch.....	472
<hr/>	
Total.....	10,972

ANNUAL REPORT

OF THE

BOARD OF PUBLIC WORKS

FOR THE YEAR

1885.

BOARD OF PUBLIC WORKS.

COMMISSIONERS.

G. H. BENZENBERG,
C. P. FOOTE,
W. P. O'CONNOR,
J. I. FROWNFEILER.

ORGANIZATION.

G. H. BENZENBERG,	-	-	PRESIDENT, <i>Ex Officio</i> .
W. P. O'CONNOR,	-	-	SECRETARY.

DANIEL REGAN,	-	-	CHIEF CLERK.
CHAS. S. BRAND,	-	-	ASST. CLERK.
HENRY A. PHILLIPS,	-	-	MESSENGER.

ENGINEER'S DEPARTMENT.

G. H. BENZENBERG,	-	-	CITY ENGINEER.
A. H. SCOTT,	-	-	ASST. CITY ENGINEER.
NICOLAUS ENGEL,	-	-	ASST. ENGINEER, West Division.
FRED. SCHNEIDER,	-	"	" South Division.
CHAS. J. POETSCH,	-	"	" East Division.
JOHN E. HATHAWAY,	-	-	DRAUGHTSMAN.
HENRY W. WHITE,	-	-	BOOKKEEPER.

REPORT.

OFFICE BOARD OF PUBLIC WORKS, }
MILWAUKEE, January, 1886. }

To the Honorable the Mayor and Common Council of the City of Milwaukee:

GENTLEMEN:—The Board of Public Works presents herewith its annual report of its official actions during the year ending Dec. 31, 1885, together with the report of the City Engineer for the same period, supplemented by the reports of the heads of the several sub-departments.

All work such as street improvements, the laying of water pipe and the construction of sewers which was ordered by your honorable body, have been completed as far as possible—an unusually large amount of said work having been completed.

WATER WORKS.

The report of the City Engineer hereto attached, together with the reports of the Collector of Water Rates, Chief Engineer of the North Point Pumping Works, Chief Engineer of High Service Pumping Station, and Bookkeeper of the Engineer's Department, contain all information as to the receipts, disbursements, construction and maintenance of this department, and to their several reports we invite your perusal.

The interest on the bonded indebtedness and \$35,000 towards the sinking fund for the redemption of said indebtedness, has been paid during the past year by the department, from its receipts, in addition to the amount necessary to be expended for its maintenance.

The North Point Pumping Station has been further improved by the addition of a battery of three steel boilers, the construction of an apparatus for the

delivery of coal, and by grading the grounds surrounding the station, a detailed description of which improvements will be found in the City Engineer's report.

The High Service Pumping Station is in good condition, but the past year has demonstrated the fact that this station is inadequate to supply the northerly section of the city with water at sufficient pressure. The erection of another station at a suitable point will shortly become a necessity.

For statistics as to the working of the engines and pumping machinery of the department, we respectfully refer you to the report of Thos. McMillan, Chief Engineer of the Pumping Stations.

SEWERS.

The additional sewers constructed during the past year amounted to $9\frac{276}{1000}$ miles, which being added to those built in former years, shows that the total length of sewers now in use is $127\frac{506}{1000}$ miles, which have been constructed at a total cost of \$1,486,094.74. One hundred and twenty-three catch basins were built during the year 1885, making a total of 2,460 now in use.

The sewers built during the year comprise $10,277\frac{75}{100}$ lineal feet of brick sewers, and $38,700\frac{89}{100}$ feet of pipe sewers divided between the several sewerage districts as follows:

	BRICK—Feet.	PIPE—Feet.
East Sewerage District.....	407.75	7,733.25
West Sewerage District.....	6,706	19,032.64
South Sewerage District.....	3,164	11,935
Total.....	10,277.75	38,700.89

EAST SEWERAGE DISTRICT.

Cost of sewers paid out of sewerage fund.....	\$4,110 01
Cost of sewers paid by special assessment.....	7,475 50
Cost of inspection of sewers.....	474 00
Cost of 12 new catch-basins.....	540 00
Cost of cleaning and repairing sewers and catch-basins and other materials not included in contract.....	5,641 15
Total.....	\$18,240 66

WEST SEWERAGE DISTRICT.

Cost of sewers paid out of sewerage fund.....	\$30,735 82
Cost of sewers paid by special assessment.....	25,762 30
Cost of inspection of sewers.....	1,912 00
Cost of 67 new catch-basins.....	3,015 00
Cost of cleaning and repairing sewers and catch-basins and other materials not included in contracts	11,253 94
Total.....	\$72,679 06

SOUTH SEWERAGE DISTRICT.

Cost of sewers paid out of sewerage fund.....	\$12,364 32
Cost of sewers paid by special assessment.....	15,785 98
Cost of inspection of sewers.....	863 75
Cost of 44 new catch-basins.....	1,980 00
Cost of cleaning and repairing sewers and catch-basins and all other materials not included in contracts	4,407 62
Total.....	\$35,401 67

RECAPITULATION.

East Sewerage District.....	\$18,240 66
West Sewerage District.....	73,954 06
South Sewerage District	35,401 67
Total.....	\$127,596 39

The amount of sewerage certificates issued by the Board of Public Works since 1869 is as follows :

1869.....	\$11,587 58
1870.....	19,512 34
1871.....	5,694 02
1872.....	24,832 23
1873.....	18,769 62
1874.....	92,141 02
1875.....	59,681 07
1876.....	64,067 10
1877.....	67,451 44
1878.....	44,285 58
1879.....	40,750 01
1880.....	29,171 56
1881.....	7,005 17
1882.....	37,486 20
1883.....	24,425 57
1884.....	41,234 87
1885.....	48,921 41
Total.....	\$637,016 79

MENOMONEE SPECIAL SEWERAGE WORKS.

Considering the difficulties encountered, a fairly large amount of work was performed during the past year. The pump well, gate well, engine foundations, conduits and weir were built by this Board without contract. The engine house, boiler house, coal house, etc., were constructed under contract by M. Davelaar. The engines, pumps and boilers were constructed and set up by E. P. Allis & Co. Section No. 2, for which the contract was let some years ago, was finished, and also a portion of Section No. 4. Details of the extent and cost of the above work is embraced in the report of the City Engineer.

STREETS, ALLEYS AND SIDEWALKS.

A full and detailed description of all work done on the various streets and alleys throughout the city is contained in the several reports of the Assistant Engineers, which are embraced under the City Engineer's report.

We note that a total of 17 503-1,000 miles of street work has been performed at a total cost of \$268,302.69.

The length of streets newly paved during the year was 1 56-100 miles.

The length of streets newly graded and graveled and otherwise improved during the year was 5 9-10 miles.

About 14½ miles of new sidewalks were constructed during the year and about 2 miles was repaired at the expense of the property abutting.

STREET CLEANING.

This work performed by men and teams employed by the day, as required, cost the sum of \$37,824.31.

The removal of ashes cost the sum of \$12,623.32, and was performed in the same manner as the street cleaning.

STREET SPRINKLING.

The various streets in the several wards of the city was done by men and teams employed by this board, and, including the cost of water used,

amounted to an expenditure of \$33,996.63, of which sum \$28,105.33 was assessed against the property abutting the streets sprinkled.

SCHOOLS AND PUBLIC BUILDINGS.—NORMAL SCHOOL BUILDING.

This school house which was completed during December, 1884, was further improved this last year by the addition of a steam heating apparatus, placed therein by J. P. Rundle, for the sum of \$4,200. The total cost of the building was \$39,289.84.

ENGINE HOUSE NO. 7.

This building, constructed after plans and specifications submitted by H. C. Koch & Co., and located on the corner of Kinnickinnic Avenue and Maple Streets, costs the sum of \$7,178.76, detailed as follows :

Hennessy & Janka, contract for building.....	\$6,725 00
Hennessy & Janka, extra floor joists.....	22 00
W. E. Goodman, drains and plumbing, etc.....	291 00
H. C. Koch, architect fees	140.76
	<hr/>
	\$7,178 76

ENGINE HOUSE NO. 10.

Contracts were let September 22, 1885 and October 2, 1885 to Chas. Kraatz to construct the building, and to E. T. Doyn to do all plumbing, drain laying and gas fitting therein, the work to be completed during the month of January, 1886. The contracts are as follows:

C. Kraatz, contract for building.....	\$11,735 00
E. T. Doyn, plumbing, etc.....	258 00
	<hr/>
Total.....	\$11,993 00

Work has proceeded steadily thereon and the building is nearly completed.

CENTRAL POLICE STATION.

This building was completed during the month of February and has since been occupied by the Police Department. The entire cost of the building was \$36,172.07 divided as follows:

Thompson & Brockman, contract for building.....	\$28,833 00
Thompson & Brockman, extra work.....	634 20
Geo. A. Spence, plumbing and draining (contract).....	959 00
Geo. A. Spence, extra plumbing and draining.....	457 09
J. P. Rundle, steam heating.....	2,765 00
Gas fixtures.....	260 10
Extra iron work on cells.....	154 21
Coal vault under sidewalk.....	595 00
Inspector's fees.....	766 00
Architect's fees.....	687 60
Incidentals.....	60 87
Total.....	\$36,172 07

The extra work on the building and the extra work in plumbing and drain laying was made necessary by reason of encountering a number of fresh water springs in the basement and at the foundations to the buildings.

The station was furnished at a cost of \$1,405.16, exclusive of such old furnitnre as could be used.

FIFTEENTH DISTRICT SCHOOL.

This building, the construction of which was begun in 1884, was completed during the month of February, 1885. It is located on the corner of Twentieth street and Cold Spring avenue, in the Second ward, and contains eight large class rooms.

The amounts expended in the construction of this building is in detail as follows :

Chas. Kraatz, contract for building.....	\$18,393 00
Chas. Kraatz, extra foundation.....	29 20
Sloteman & Kruse, plumbing and drains.....	549 00
H. Mooers, steam heating.....	3,000 00
Window guards.....	49 23
Electric bells.....	52 40
Architect's fees.....	469 42
Inspector's fees.....	596 00
Contingencies.....	63 75
Total.....	\$23,202 00

TWELFTH DISTRICT BRANCH SCHOOL.

Contracts were entered into with Oscar Knie for the construction of this building on Sept. 8, 1885, for the sum of \$20,893. The plumbing and drain

laying was awarded to Wm. Eagan for the sum of \$733, and the contract for the steam heating apparatus was awarded to J. P. Rundle for the sum of \$2,489.46. The entire cost of the building when completed, including architect's and inspector's fees will be about \$25,000, and it will contain eight large class rooms.

EIGHTH DISTRICT PRIMARY SCHOOL NO. 2.

This building to be located on the corner of Sixteenth avenue and Mineral street, was placed under contract during the past year and is now under course of construction. The contracts are as follows ;

Wm. Klocksinn, for the building	\$24,420 00
Wm. Eagan, for the plumbing	867 00
C. A. Barker, for the steam heating.....	3,095 00

The cost of the building when completed, including fees of architect and inspector, will amount to about \$29,500, and it will contain 8 large class-rooms.

ELEVENTH DISTRICT SCHOOL.

An addition of six class-rooms to this building is being constructed by H. Kamschulte for the sum of \$14,500. The building now contains 17 class-rooms, making it one of the largest school buildings in the city.

NINTH AND TENTH DISTRICT SCHOOLS.

Steam heating was introduced into these school buildings during the past year: at a cost of \$5,200 for the Ninth District School, and of \$4,337.87 for the Tenth District School.

REPAIRS OF SCHOOL BUILDINGS.

The school buildings were repaired as occasion required under the supervision of the Board of Public Works at a total expenditure of \$22,809.49, in which was included an outlay of \$1,500.00 in making an addition to the Ninth District primary or branch school.

BRIDGES.

No new bridges were completed during the past year.

Contracts were entered into for the construction of an iron swing bridge across Kinnickinnic river, at the intersection of Kinnickinnic avenue, at a total cost of \$32,550.00 including foundations and abutments.

Contracts were also entered into for the construction of the substructure of Sixth avenue bridge across Burnham's canal for the sum of \$21,450, and the contract for the superstructure will be let during the month of January, 1886.

The bridges in use at present are as follows :

FIVE STATIONARY BRIDGES OF IRON.

1. North avenue, completed in	1874
2. Humboldt avenue, completed in	1876
3. Cherry street, completed in	1877
4. First avenue viaduct, completed in	1878
5. Racine street, completed in	1883

FOUR STATIONARY BRIDGES OF WOOD.

1. Dock street (across canal), completed in	1866
2. Dock street (across water power), completed in	1870
3. Canal street (across Holton's canal, completed in	1873
4. Canal street (across Menomonee river) completed in	1871

THREE SWING BRIDGES OF WOOD.

1. Pleasant street, completed in	1870
2. Clinton street, completed in	
3. Lincoln avenue, completed in	1882

SEVENTEEN SWING BRIDGES OF IRON.

1. Point street, completed in	1871
2. Chestnut street, completed in	1872
3. State street, completed in	1871
4. Huron street, completed in	1868
5. Buffalo street, completed in	1875
6. Broadway, completed in	1872
7. Muskego road, completed in	1873
8. First avenue, completed in	1872

9. Menomonee, completed in.....	1880
10. East Water street, completed in.....	1881
11. Becher street, completed in.....	1881
12. Grand avenue, completed in.....	1882
13. Cherry street, completed in.....	1883
14. Oneida street, completed in.....	1884
15. Sixth street, completed in.....	1884
16. Kinnickinnic avenue, under construction.....	
17. Sixth avenue, under construction.....	

The amounts expended for repairs of bridges are divided as follows :

Lumber and piles	\$5,673 25
Other supplies	2,874 11
Labor used in repairing	10,470 49
	<hr/>
	\$19,017 85

DREDGING AND DOCKING.

The amount set aside by the Common Council for doing this work during the past year was \$20,000.00.

Contracts were awarded to C. H. Starke at 12 cents per cubic yard for the Milwaukee river, 9 cents per cubic yard for the Menomonee river and 8½ cents per cubic yard for the Kinnickinnic river.

The total amount of earth removed was as follows:

Milwaukee river	74,903	cubic yds
Menomonee river.....	45,080 4-10	" "
Kinnickinnic river.....	49,630 7-10	" "
	<hr/>	
Making a total of.....	169,614 1-10	" "
Which cost.....	\$17,264 20	

The amount of dredging performed, it will be observed by comparing with the work done last year, was 64,056 1-10 cubic yards more than the previous year, and cost but \$3,930.81 more. A large amount of the dredging done was performed at the mouths of the sewers emptying into the rivers, it having become necessary as a sanitary measure.

The dockage of the city crossings was repaired at a cost of \$1,756.51.

The following is a statement of expenditures and the condition of the fund:

Balance unexpended from 1884.....		\$2,106 42
Appropriation 1885.....		20,000 00
		<hr/>
		\$22,106 42
Paid for dredging.....	\$17,264 20	
Paid for docking.....	1,756 51	
Paid for sounding.....	40 50	
Paid for inspection.....	880 00	
	<hr/>	
Total.....		19,941 21
		<hr/>
Balance.....		\$2,165 21

PUBLIC PARKS.

The work of improving Juneau Park was proceeded with during the year, after plans submitted by Middlemas & Laing, by men and teams employed by the day. A large amount of grading was done, the work being pushed until the weather prohibited further operations. The amount expended was \$9,670.11.

It is proposed during the coming year to proceed with the work with all the diligence and to such extent as funds will allow. The amount of money proposed to be expended is about \$28,000, which was raised by assessments upon the property deemed benefitted by the improvement.

The Eighth Ward Park was beautified by the erection thereon of a large fountain of the most approved modern pattern, which cost, including basin and foundations and necessary connections, the total sum of \$4,221, of which sum the citizens in the neighborhood of the park paid by private subscription \$521.

IN GENERAL.

For details, statistics and other information pertaining to the workings of this department we respectfully refer you to the reports of the several sub-departments.

We submit herewith also schedules showing contracts let, special assessments, certificates issued, and cash received for drain connections, surveying

of lots, and for miscellaneous purposes. Also a list of property (tools, etc.,) in charge of our foremen, and a complete list of all streets sprinkled.

Very respectfully,

C. P. FOOTE,

W. P. O'CONNOR,

J. I. FROWNFELTER,

Commissioners of Public Works.

SCHEDULE OF CONTRACTS, ETC.,

BOARD OF PUBLIC WORKS.

1885.

SPECIAL ASSESSMENTS.

The amounts of special assessments for various purposes, for which certificates of the Board of Public Works have been issued according to law during the year 1885, are stated in the following schedules.

RECAPITULATION

Of tax certificates issued by the Board of Public Works for street and alley improvements in the year 1885 :

WARDS.	Number of Certificates.	Amount.
First.....	291	\$7,392 20
Second.....	160	5,727 65
Third.....	.....	.....
Fourth.....	457	30,973 26
Fifth.....	.....	.....
Sixth.....	129	11,507 09
Seventh.....	.....	.....
Eighth.....	510	7,471 89
Ninth.....	618	14,093 58
Tenth.....	288	5,146 99
Eleventh.....	654	13,301 05
Twelfth.....	214	6,176 90
Thirteenth.....	391	9,185 33
Total.....	3,712	\$110,975 94

RECAPITULATION

Of special taxes assessed by the Board of Public Works for sprinkling the roadway of streets during the year 1885.

WARD.	Amount.
First.....	\$ 2,459 72
Second.....	3,742 13
Third.....	2,433 29
Fourth.....	4,898 69
Fifth.....	1,965 13
Sixth.....	2,505 22
Seventh.....	2,472 12
Eighth.....	1,550 01
Ninth.....	1,984 39
Tenth.....	2,120 15
Eleventh.....	903 01
Twelfth.....	635 09
Thirteenth.....	436 38
Total.....	\$28,105 33

RECAPITULATION

Of sewerage certificates issued for the construction of main sewers during the year 1885 :

DISTRICT.	Number of Certificates.	Amount.
East sewerage.....	261	\$ 7,475 50
West sewerage.....	908	25,659 93
South sewerage.....	552	15,785 98
Total.....		\$48,921 41

RECAPITULATION

Of special tax levied for various miscellaneous purposes during the year 1885.

FOR WHAT PURPOSE.	Amount.
Cleaning sidewalks from earth and snow.....	\$1,112 88
Repairing defective sidewalks and docks.....	2,731 60
House drains and water connections	5,478 24
Opening streets and alleys, etc.....	43,698 64
Total.....	\$53,021 36

RECAPITULATION

Of special assessments against property made for laying of water pipe for the year 1885:

WARD.	Amount.
First	\$4,505 90
Second	4,207 47
Third	148 72
Fourth	4,806 76
Fifth	700 08
Sixth	2,151 85
Seventh	
Eighth	1,197 40
Ninth	1,671 52
Tenth	3,126 33
Eleventh.....	4,764 01
Twelfth.....	5,007 58
Thirteenth.....	3,093 58
Total.....	\$35,381 20

GRAND RECAPITULATION

Of tax certificates of special assessments and water pipe assessments made by the Board of Public Works during the year 1885.

Certificates for street and alley improvements	\$110,975 94
Sewerage certificates	48,921 41
Special taxes for miscellaneous purposes.....	53,021 36
Special tax for sprinkling	28,105 33
Special assessments for water pipe	35,381 20
Total.....	\$276,405 24

COMPARATIVE STATEMENT, 1884-1885.

Total special assessments and certificates of Board of Public Works (not including water pipe) in 1884	\$175,783 40
Total special assessments and certificates of Board of Public Works (not including water pipe) in 1885	241,024 04
Increase.....	\$65,240 64

The following list shows the total amount of assessments made in each year by the Board of Public Works since it was created, water pipe excepted :

For the year 1869.....	\$88,459 28
1870.....	80,807 25
1871.....	38,391 76
1872.....	64,557 47
1873.....	78,092 13
1874.....	187,622 51
1875.....	159,851 87
1876.....	213,558 71
1877.....	227,548 73
1878.....	201,759 06
1879.....	112,096 17
1880.....	183,327 00
1881.....	38,299 45
1882.....	153,946 87
1883.....	106,893 71
1884.....	175,783 40
1885.....	241,024 04
Total.....	\$2,352,019 41

The following list shows the total amount of taxes levied against property for laying water pipe since 1871, in which year the first assessments for said work were made :

For the year 1872.....	\$83,310 65
1873.....	232,370 04
1874.....	13,089 33
1875.....	38,935 04
1876.....	37,560 00
1877.....	31,308 03
1878.....	33,390 66
1879.....	14,569 54
1880.....	26,501 46
1881.....	7,826 67
1882.....	29,831 79
1883.....	9,843 03
1884.....	37,208 91
1885.....	35,381 20
Total.....	\$632,026 35

RECAPITULATION.

Of cash received by the Board of Public Works for permits given to connect private drains with the main sewers, and paid to the City Treasurer, as follows :

1885.	EAST SEWERAGE DISTRICT.	WEST SEWERAGE DISTRICT.	SOUTH SEWERAGE DISTRICT.	TOTAL.
January		\$5 00		\$5 00
February		5 00		5 00
March	\$3 00			3 00
April	42 00	157 00	\$85 00	284 00
May	66 00	264 00	231 00	561 00
June	115 00	328 00	252 00	695 00
July	172 00	299 00	207 00	678 00
August	105 00	354 00	207 00	666 00
September	104 00	441 00	179 00	724 00
October	60 00	521 00	51 00	632 00
November	79 00	152 00	38 00	269 00
December	15 00	48 00	14 00	77 00
Total	\$761 00	\$2,574 00	\$1,264 00	\$4,599 00

The total cash receipts for sewerage permits during the year 1884 was \$2,382.00. On comparison with this year's receipts from the same source an increase is shown of \$2,217.00.

RECAPITULATION

Of cash received by the Board of Public Works for surveying private property in the several Wards of the city of Milwaukee during the year 1885 :

First Ward	\$40 00
Second Ward	16 00
Third Ward	12 00
Fourth Ward	24 00
Fifth Ward	28 00
Sixth Ward	4 00
Seventh Ward	4 00
Eighth Ward	48 00
Ninth Ward	12 00
Tenth Ward	12 00
Eleventh Ward	8 00
Twelfth Ward	8 00
Thirteenth Ward	32 00
Total	<hr/> \$248 00

MISCELLANEOUS RECEIPTS, 1885.

DATE.		FOR WHAT RECEIVED.	CREDIT TO FUND.	AMOUNT.
Feb.	2.	Removing ashes	Seventh Ward	\$11 00
	2.	For earth sold	Twelfth Ward	5 00
	3.	Repairing pavement.....	Seventh Ward	16 25
	26.	Removing rubbish	Seventh Ward	2 00
March	6.	Cleaning private drain.....	West Sewerage Fund...	3 00
	7.	Removing rubbish	Seventh Ward Fund....	12 50
	9.	Cleaning private drain.....	East Sewerage Fund ...	3 60
	25.	Hauling ashes	Seventh Ward Fund....	11 25
April	17.	Sprinkling wagon sold.....	Eighth Ward Fund....	55 60
May	2.	Repairing pavement.....	Fifth Ward Fund	2 00
	12.	Houses sold on Juneau Park.....	Seventh Ward Fund....	1,526 42
	23.	Fine paid.....	Water Fund	5 60
	29.	Scrapers sold	Twelfth Ward Fund....	22 75
June	2.	Gutter stone sold.....	Seventh Ward Fund....	7 50
	4.	Wagons sold.....	Eighth Ward Fund....	55 00
	4.	Repairing sidewalk.....	First Ward Fund.....	20 97
	6.	Cleaning private drain.....	South Sewerage Fund ..	5 00
	6.	Gutter stones sold.....	Seventh Ward Fund....	8 50
	6.	Removing ashes	Seventh Ward Fund....	10 00
	9.	Gutter stone sold.....	Seventh Ward Fund....	10 50
	9.	Rent of building	Tenth Ward Fund	5 00
	13.	Fine paid.....	Water Fund	5 00
	22.	Gutter stone sold.....	Seventh Ward Fund....	7 50
	23.	Cleaning private drain.....	South Sewerage Fund ..	4 00
July	1.	Flushing private drains	Water Fund	70 00

MISCELLANEOUS RECEIPTS, 1885—CONTINUED.

DATE.	FOR WHAT RECEIVED.	CREDIT TO FUND.	AMOUNT.
July	1. Flushing private drains	East Sewerage Fund ...	\$17 00
	1. Cleaning private drain	West Sewerage Fund...	60 00
	1. Cleaning private drain	South Sewerage Fund ..	54 00
	1. Gutter stones sold	Seventh Ward Fund....	10 00
	1. Repairing pavement	Second Ward Fund ...	4 25
	11. Cleaning private drains	South Sewerage Fund ..	4 00
	11. Cleaning private drains	Water Fund	2 00
	20. Repairing pavement	Sixth Ward Fund	5 00
Aug.	6. Repairing pavement	Seventh Ward Fund....	8 50
	7. Cleaning sewer	South Sewerage Fund ..	10 00
	11. Repairing pavement	Fifth Ward Fund	3 00
	11. Repairing pavement	Eighth Ward Fund....	50
	11. Repairing pavement	Fifth Ward Fund	2 00
	24. Repairing street	Seventh Ward Fund....	7 50
	26. Repairing pavement	Third Ward Fund....	5 00
	27. Repairing pavement	Third Ward Fund....	3 50
	28. Repairing pavement	Third Ward Fund....	3 50
	29. Repairing pavement	Third Ward Fund....	6 00
	31. Repairing street	Seventh Ward Fund....	7 00
Sept.	1. Repairing street	Second Ward Fund....	8 75
	1. Repairing street	Third Ward Fund....	11 00
	1. Repairing street	Fifth Ward Fund	2 00
	1. Repairing street	Sixth Ward Fund	1 00
	1. Repairing street	Seventh Ward Fund....	4 50
	2. Repairing street	Fifth Ward Fund	10 75
	2. Repairing street	Sixth Ward Fund	2 50
	2. Repairing pavement	Third Ward Fund....	3 75
	3. Repairing street	Seventh Ward Fund....	2 25
	17. Flushing sewer	South Sewerage Fund..	2 00
	19. Cleaning private drains	Water Fund	2 00
	19. Cleaning private drains	East Sewerage Fund ...	2 00
	19. Cleaning private drains	West Sewerage Fund...	2 00
	21. Street scrapers sold	Twelfth Ward Fund....	24 00

MISCELLANEOUS RECEIPTS, 1885—CONTINUED.

DATE.	FOR WHAT RECEIVED.	CREDIT TO FUND.	AMOUNT.
Sept.	26. Repairing street.....	First Ward Fund.....	\$4 00
	26. Repairing street	Second Ward Fund	4 25
	26. Repairing street	Third Ward Fund.....	3 50
	26. Repairing street	Fourth Ward Fund	19 75
	26. Repairing street	Fifth Ward Fund	2 75
	26. Repairing street	Seventh Ward Fund	16 00
	26. Repairing street	Third Ward Fund.....	20 00
	29. Repairing street	Fourth Ward Fund	5 00
Oct.	2. Lumber sold.....	Fifth Ward Fund	5 00
	3. Wagon sold	Seventh Ward Fund	25 00
	3. Cleaning private drain.....	South Sewerage Fund...	1 00
	3. Cleaning private drain.....	Water Fund	2 00
	8. Repairing stone pavement.....	Fifth Ward Fund	2 50
	17. Cleaning private drain.....	East Sewerage Fund	3 00
	23. Hopper closet sold.....	General City Fund	28 80
	23. Brick sold	General City Fund	3 50
	23. Oil barrels sold.....	General City Fund	2 60
	26. Repairing streets.....	Seventh Ward Fund.....	5 75
	30. Cleaning private drain.....	East Sewerage District ..	3 00
	31. Work and material furnished Co. of Milwaukee	Seventh Ward Fund	125 40
Nov.	3. Fine Paid	Water Fund	5 00
	9. Cleaning private drain.....	West Sewerage Fund	3 00
	13. Gutter stone sold.....	Sixth Ward Fund	56 68
	19. Cleaning private drain.....	West Sewerage Fund.....	3 00
	21. Cleaning private drain.....	South Sewerage Fund	5 00
	28. Pound house, barn and fence sold.....	General City Fund.....	47 00
	30. Paving street.....	Second Ward Fund	3 00
Dec.	5. Repairing pavement.....	Second Ward Fund	2 50
	7. Flushing sewer.....	Water Fund	1 00
	17. Stone sold	Fourth Ward Fund.....	558 00
	23. Changing catch-basins.....	South Sewerage Fund...	36 00
	23. Repaving street.....	Fifth Ward Fund	199 65
	31. Repairing street	First Ward Fund	5 00

MISCELLANEOUS RECEIPTS, 1885—CONTINUED.

DATE.	FOR WHAT RECEIVED.	CREDIT TO FUND.	AMOUNT.
Dec. 31.	Repairing street	Third Ward Fund.....	\$6 50
31.	Repairing street	Fourth Ward Fund.....	3 00
31.	Repairing street	Eighth Ward Fund.....	8 00
31.	Constructing catch-basin.....	South Sewerage Fund ..	30 00
31.	Cleaning private drains.....	East Sewerage Fund ...	9 00
31.	Cleaning private drains.....	South Sewerage Fund ..	6 00

WARD PROPERTY.

WARDS.

	Wrenches.	Squares.	Augers.	Screw drivers.	Tape Lines.	Grind Stones.	Straight edges.	Truck Wagons.	Sprinkling Tubs.	Oil or Naptha Lamps.	Stone—cubic yds.	Lumber—feet.	Cedar Posts.	Picks.
First.....		1						4	4	31		1000		
Second.....		1			1			4	8					9
Third.....		1						4	4					3
Fourth.....								8	8	45		500		2
Fifth.....		1			1	1		4	4			10500	100	5
Sixth.....	1							3	5	45		6000		8
Seventh.....						1		6	5		7	31600		2
Eighth.....						1		3	3	93		500		9
Ninth.....								3	3	36		600		4
Tenth.....		1			1				3	75				13
Eleventh.....		1						2	2	127		200		3
Twelfth.....									1	34				1
Thirteenth.....									1	59				4

WARD PROPERTY—CONTINUED.

WARDS.	Hatchets.	Hammers.	Axes.	Grub Hoes.	Saws and Files.	Rakes.	Crow Bars.	Wheel Barrows.	Lanterns.	Scythes.	Tampers.	Pounders.	Street Scrapers.	Brooms.
First .....	.....	3	1	.....	1	1	2	.....	5	3	1	1	.....	.....
Second .....	.....	5	2	.....	3	1	2	2	4	.....	12	.....	1	4
Third .....	.....	6	.....	.....	1	1	1	2	2	.....	2	.....	.....	.....
Fourth	2	2	1	1	2	2	.....	2	2	1	4	.....	1	.....
Fifth	3	3	2	.....	2	2	1	2	3	2	2	.....	4	.....
Sixth	4	1	.....	.....	3	.....	3	2	2	1	.....	3	1	.....
Seventh	2	9	.....	.....	.....	1	3	2	4	2	2	1	10	2
Eighth	1	2	4	4	2	1	1	2	2	.....	3	.....	.....	.....
Ninth	1	.....	.....	.....	.....	.....	1	1	.....	1	1	.....	.....	.....
Tenth	1	3	.....	.....	1	.....	2	2	1	1	1	.....	.....	.....
Eleventh	1	.....	.....	.....	2	1	.....	.....	.....	1	.....	.....	.....	.....
Twelfth	3	.....	.....	1	2	2	.....	1	3	.....	3	.....	.....	1
Thirteenth	1	.....	1	.....	1	1	1	1	1	2	.....	1	.....	.....

WARD PROPERTY—CONTINUED.

WARDS.

	Pitch Forks.	Spirit Levels.	Shovels.	Hoes.	Cold Chisels.	Pails.	Snow and other Plows.	Wagon Boxes.	Rubber Boots.	Nails, pounds.	Hose, feet.	Planes.	Lawn Mowers.	Oil Cans.
First				8			2		1				1	2
Second	1		16	13								1		
Third			4	12										
Fourth	4		12				5			50				2
Fifth				2										
Sixth			16	14	1		1						1	1
Seventh				15			2	2		150	500	1	1	
Eighth		1	4	4										
Ninth				4										
Tenth				13										
Eleventh				6			1							
Twelfth				10			1							1
Thirteenth				6					1					

STATEMENT,

Showing cost of Street Work, etc., in the several Wards for the year 1885, ending December 31st.

WARDS.	NAME OF FOREMAN.	Labor and use of teams cleaning streets.	Cost of gravel, sand stone chips used for repairs of streets.	Labor and use of teams repairing streets.	Sundry supplies, such as earth, hardware, drinking hydrants & repairs of tools, street lamps.	Lumber used for mak- ing cross walks and general wood work.	Maintaining of public squares. etc.	Cost of repairing de- fective sidewalks, etc.	Cost of cleaning snow from sidewalks.	Cost of removing ashes.	Cost of cedar & stone paving blocks used for repairing.	Flag stones used for crosswalks and lay- ing same.
First.....	Jas. McHugh.....	\$3,587 02	\$3,439 98	\$3,903 57	\$376 06	\$1,022 72	\$114 75	\$205 30	\$432 50	\$1,511 00	\$4,229 28	.....
Second.....	Casper Borgelt.....	3,395 99	2,312 87	2,789 62	183 77	755 25	18 25	147 45	188 00	1,564 00	5,308 89	\$347 41
Third.....	Tim O'Brien.....	3,520 63	6,390 22	5,585 28	248 64	417 60	.....	.....	76 21	1,257 73	21,647 52	503 86
Fourth.....	Peter Cannon.....	5,275 61	1,426 81	1,400 95	292 33	1,351 53	494 75	105 60	157 50	1,325 75	1,311 94	.....
Fifth.....	Henry Bauer.....	2,536 09	1,985 76	4,317 57	426 30	1,664 65	.....	.....	9 03	802 93	13,800 96	.....
Sixth.....	Val. Mueller.....	2,927 46	1,405 70	2,188 37	56 71	433 42	.....	.....	.....	825 26	228 16	.....
Seventh.....	L. T. Stalhond.....	2,606 80	1,137 69	3,048 40	90 85	151 16	1,169 80	35 25	80 10	2,547 55	.....	402 68
Eighth.....	Fred. Westphal.....	2,681 54	655 70	2,625 49	224 38	271 84	43 88	3 37	.....	783 81	102 50	820 73
Ninth.....	Phillip Daas.....	3,453 30	601 70	796 50	101 80	473 03	.....	67 09	40 00	410 50	.....	38 92
Tenth.....	John Dobbertin.....	3,283 60	2,971 80	1,846 28	148 50	808 42	.....	215 75	24 00	662 15	.....	.....
Eleventh.....	John Studerns.....	1,577 28	532 03	652 54	39 75	91 44	.....	6 45	71 44	442 89	.....	.....
Twelfth.....	Levi Haines.....	1,085 53	1,165 63	2,149 03	180 36	843 66	.....	49 00	56 00	256 50	4,389 63	.....
Thirteenth.....	Chas. Klage.....	1,803 46	1,389 96	914 98	160 10	494 50	.....	540 69	94 00	233 25	163 50	.....

GENERAL CITY PROPERTY.

The superintendent of Sewers, School Repairs and Bridges, report the following property in their possession:

SEWERS - WEST AND EAST SEWERAGE DISTRICT.

Tool chest.....	1
Sewer cleaning machine.....	1
Feet of new wire rope.....	1,000
Feet of old wire rope.....	125
Pails.....	2
Hand ropes.....	2
Hose protectors.....	1
Picks.....	10
Lanterns.....	6
Ladders.....	1
Pairs of rubber boots.....	3
Hydrant wrench.....	1
Feet of iron chain.....	100
Oil can.....	1
Force pump.....	1
Spirit level.....	1
Feet of hose.....	400
Cement box.....	1
Scoops.....	3
Feet of lumber.....	1,850
Manhole covers.....	4
Catch basin covers.....	40
Pipe, 12-inch.....	17
Pipe, 15-inch.....	6
Pipe, 18-inch.....	2
Connection traps.....	1
Bends, 12-inch.....	8

SOUTH SEWERAGE DISTRICT.

Derricks.....	2
Ropes.....	2

Feet of hose	400
Wheelbarrow	1
Picks	6
Pails	4
Crowbars	3
Lamps	4
Centers	3
Wagons	1
Hatchets	3
Wagon boxes	2
Vise	1

SCHOOL REPAIRS.

Swinging scaffold, complete	1
Fence post augers	2
Scale	1
Paint Mill	1
Large timber saw	1
Tinsmith's shears	1
Scissors, pair	1
Ladder, 30 feet long	1
Shovels	3
Spades	3
Picks	3
Rake	1
Lawn Mower	1
Paint brushes, doz.	2
Gas tongs	2
Auger, 2-inch	1
Wheelbarrow	1

BRIDGE REPAIRS.

Clamp screws	5
Clamp chains	3
Sledges	2
Crowbars	9
Cant hooks	4
Hardy chisels	6
Spike sets	3
Shovels	2
Cross-cut saws	3
Timber dollies	4
Ship augers	19
Wrenches	21
Gas tongs	7
Jack screws	23

Jack bars.....	12
Blocks and falls, 8-inch.....	2
Blocks and falls, 6-inch.....	2
Large scows.....	2
Small scows.....	2
Oars.....	2
Pike Poles.....	8
Pitch Kettle.....	1
Grapple.....	1
Iron wedges.....	10
Wheel wrench.....	1
Pair purchase block.....	1
Grindstones.....	2
Ferry chains.....	2
Red lamps.....	5
Large bright lamps.....	6
Iron sheave blocks.....	2
Shackles.....	8
Sulphur kettle.....	1
Ladle.....	1
Stone and iron drills.....	25
Swivel screws.....	1
House screws.....	8
Wooden rollers.....	14
Cape chisels.....	5
Stone chisels.....	8
Ice tongs.....	2
Scow lines.....	4
Shackle bars.....	2
Kegs of spike.....	13
Coal stove.....	1
Ice saws.....	3
Ice pikes.....	4
Wood stove.....	1
Bbls. linseed oil.....	$\frac{1}{2}$
Bbls. mineral paint.....	1
Paint brushes.....	6
Scrapers.....	4
Ladders.....	3
Staging ropes.....	2
Guard racks.....	8
Putty Knife.....	1
Pounds white lead.....	25

The following property is in use at the various bridges, viz:

Life preservers and grappling irons.....	19
Scrapers.....	31
Wheelbarrows.....	18

Lanterns.....	31
Axes	17
Hand axes	17
Shovels.....	19
Snow shovels	33
Scoops	16
Brooms.....	30
Crowbars.....	27
Oil cans.....	33
Wrenches	18
Picks.....	11
Ice forks	9

MISCELLANEOUS CONTRACTS.

Jan.	30.	J. W. Eviston, constructing and erecting a battery of three boilers with proper settings at the North Point Pumping Works	\$8,456 84
Feb.	3.	J. P. Rundle, steam heating apparatus in the Normal School building.	4,200 00
	19.	Dennis Long & Co., 280 tons 30-inch cast iron water pipe, at \$24.90 per ton.	
		Lake Shore Foundry, 1,220 tons of cast iron water pipe :	
		100 tons of 12-inch pipe	at \$26 25 per ton.
		260 tons of 8-inch pipe	26 55 "
		450 tons of 6-inch pipe	26 90 "
		6 tons of 4-inch pipe	26 90 "
		4 tons of 3-inch pipe	26 90 "
		400 tons of 6 and 8-inch pipe	26 55 "
			26 90 "
April	1.	Northwestern Globe Gas Light Co., lighting and maintaining naphtha lamps in the First, Fourth, Sixth and Thirteenth Wards, at \$27.00 per lamp per year.	
	11.	Oscar Knie, constructing foundation walls, etc., at the North Point Pumping Works	1,175 00
	17.	W. E. Goodman, plumbing, gas fitting and drainage in Engine House No. 7	291 00
		J. W. Hennessey & Geo. Janke, constructing Fire Engine House corner of Maple street and Kinnickinnicave.	6,725 00
	18.	Martin Davelaar, constructing a boiler house, coal shed, engine house, for the Menomonee Special Sewerage Works.	11,300 00
		Rust & Cooleidge, roof trusses and beams for Boiler House, Engine House at the Menomonee Special Sewerage Works.	2,600 00
May	4.	Thompson & Brockman, constructing coal vault for Central Police Station	595 00
	7.	C. H. Sullivan, laying 12-inch water main pipe, at 45c per lineal foot.	
		Thos. Reilly, laying 8-inch water main pipe, at 27½c per lineal foot.	
		Thos. Reilly, laying 6-inch water main pipe, at 22¾c per lineal foot.	
		O. L. Packard, Whitcomb planer for North Point Pumping Works.	485 00
	9.	John Schroeder, common flooring.	19 00
		John Schroeder, common lumber.	10 00
		D. W. Chipman, 3-inch oak plank, per one thousand feet.	20 75
	15.	Jas. Sheriffs, castings for reservoir, at \$47.50 per ton.	
	16.	Northwestern Fuel Company, 5,000 tons of coal for Water Department, at \$4.85 per ton.	
	22.	G. G. Campbell, iron stop gates.	525 00

June	26.	C. H. Starke, driving piles at Sixth street bridge.....	\$870 00
	27.	C. H. Starke, repairing docks, piles driven at 27c per lineal foot. 12 x 12 pine timber, framed, including bolts, at 32c per lineal foot. Anchor sills, framed, at 32c per lineal foot. Anchor timbers, at 21c per lineal foot. Sheet piling, at \$32.00 per 1,000 ft. board measure. Anchor timber removed, at 15c per cubic foot. Old sheet piling, at \$15.00 per 1,000 ft. board measure. Old piles pulled, at 32c per lineal foot. Old piles cut off, at \$1.00 each.	
July	25.	J. E. Corrigan, 1,600 tons Coal for Menomonee Special Sewerage Works, at \$1.49 per ton.	
	28.	O. T. Sloteman, steam heating apparatus in the Tenth District School building.....	4,337 27
Aug.	7.	F. S. Blodgett, constructing the unfinished work of the easterly portion of Section No. 4 of the Menomonee Special Sewerage Works, at \$14.90 per lineal foot.	
	28.	C. B. Kruse, steam heating apparatus in the Ninth District School building.	5,200 00
	31.	H. Kamschulte, constructing an addition to the Eleventh District School building.....	14,500 00
Sept.	5.	J. H. McGovern, constructing Chute Trestle Work at the North Point Pumping Works.....	2,482 50
	8.	William Eagan, plumbing drains and gas fitting in the new Twelfth District School building.....	733 00
		Oscar Knie, constructing school building on lots 7, 8, 9 and 10, block 2, in Buttler's Addition in the Twelfth Ward.....	20,893 00
	11.	William Klocksins, constructing new school building in the Eighth Ward..	24,420 00
		William Eagan, plumbing, gas fitting and drains, in the new Eighth District School.....	867 00
	16.	C. H. Starke, constructing substructure of bridge across the Kinnickinnic River at Kinnickinnic ave.....	26,500 00
	22.	Chas. Kraatz, constructing Fire Engine House on S. 3/4 of lot 10, in block 40, Third Ward.....	11,735 00
		W. T. Casgrain, constructing a retaining wall and sewer outlet across the south side of Dock street in the Sixth Ward.....	5,699 00
Oct.	2.	E. T. Doyn, plumbing, gas fitting and drains, in the new Engine House on the S. 3/4 of lot 10, block 40, in the Third Ward.....	258 00
	20.	Penn. Bridge Works, constructing the superstructure of bridge across Kinnickinnic river.....	6,050 00
Nov.	13.	Jos. P. Rundle, steam heating apparatus in the new Twelfth District School building.....	2,489 46
	10.	John Ryecraft & Geo. McGarrigle, constructing sewer in Washington ave., from southern limits to Menomonee Canal.....	30,000 00
Dec.	4.	C. H. Starke, constructing the substructure of a bridge across Burnham's Canal at Sixth ave., in the Eighth Ward.....	21,450 00

SCHEDULE OF CONTRACTS—FIRST WARD.

DATE.	CONTRACTOR.	STREET.	FROM.	TO.	Grading per cubic yard.	Graveling per cubic yard.	Gutter paving per square yard.	Planking per lineal foot.	Stone curbing per lineal foot.	Resetting curbing per lineal foot.	Wood curbing per lineal foot.	Alley paving per square yard.
May 6.	William Casper	Alley, block 153.	Division	Knapp	.18							
8.	Edwin Hyde	Lyon.	Cass	Webster Place					.60	.12		
15.	William Casper	Cramer.	North Avenue	Park Place		.78						
15.	Jas. O'Connor	Cramer.	North Avenue	Park Place							.10	
15.	F. J. Johnson	Cramer.	North Avenue	Park Place	.12 $\frac{1}{4}$							
15.	William Casper	Cramer.	North Avenue	Park Place			.47					
15.	William Casper	Maryland	Greenwich	Bradford	.19 $\frac{1}{2}$							
28.	William Casper	Maryland	Greenwich	Bradford		.79	.48					
28.	Jas. O'Connor	Maryland	Greenwich	Bradford				.26				
June 26.	J. H. Kearney	Knapp	Marshall	Jefferson					.64	.14		
Oct. 16.	P. Shea	Greenwich	Oakland Avenue	Maryland	.12							
16.	John T. Hoff	Greenwich	Oakland Avenue	Maryland		.73	.44					
16.	Wm. Franey	Greenwich	Oakland Avenue	Maryland				.24				
16.	John T. Hoff	Greenwich	Oakland Avenue	Maryland								.13

SCHEDULE OF CONTRACTS—FIRST WARD—CONTINUED.

DATE.	CONTRACTOR.	STREET.	FROM.	TO.	Grading per cubic yard.	Graveling per cubic yard.	Gutter paving per square yard.	Planking per lineal foot.	Stone curbing per lineal foot.	Resetting curbing per lineal foot.	Wood curbing per lineal foot.	Alley paving per square yard.
Oct. 16.	John O'Neill	Cramer	North Avenue	Bradford				.23	9-10			
16.	Mantle Marsh	Alley, block 237.	Royal Place.	Dane Place.								.70
23.	P. Shea	Maryland	Bradford	Bellevue Place.	.23							
23.	John T. Hoff	Maryland	Bradford	Bellevue Place.		.90						
23.	M. Dunn	Maryland	Bradford	Bellevue Place.			.53					
23.	Jas. O'Connor	Maryland.	Bradford	Bellevue Place.				.29				

SCHEDULE OF CONTRACTS—SECOND WARD—CONTINUED.

DATE.	CONTRACTOR.	STREET.	FROM	TO	(Grading per cubic yard.	(Travelling per cubic yard.	Gutter paving per square yard.	Planking per lineal foot.	Alley paving per square yard.	Cedar block paving per square yard.	House drains per lineal foot.	Long water service per lineal foot.	Short water service per lineal foot.	Stone curbing per lineal foot.
Aug.	21. John Denker.	Alley, Block 45.	{ State. Fifth.	Prairie.					.65					
				Sixth.										
Sept.	1. Wm. Veitch	Twenty-first	Cedar	State.				.24						
	1. Chas. Forrestal	Twenty-first	Cedar	State	.30									
	18. Jas. O'Donnell.	Twenty-third	State.	Chestnut.	.37		.53							
	18. Chas. H. Tesch.	Twenty-third	State.	Chestnut.	.92									
	18. John O'Neill.	Twenty-third	State.	Chestnut.				.24 3/4						
Oct.	2. Pat Shea.	Cedar	Twenty-fourth	Twenty-fifth	.22	.90								

SCHEDULE OF CONTRACTS—THIRD WARD.

DATE.	CONTRACTOR.	STREET.	FROM	TO	(Granite paving bl'ks per square yard.	Gravel for street repairs pr. cu. yd.	Laying stone blocks per square yard.
May	22. M. J. Eviston.....	Gravel for street repairs.....				.80	
June	5. J. H. Anderson.....				1.85		
	23. John Clauder.....	Broadway.....	Buffalo.	Huron.....			.14¾
	23. Henry Gerling.....	Gravel for street repairs.....				.71	
Aug.	21. W. G. Taylor.....				1.84		
	21. M. J. Eviston.....	Gravel for street repairs.....				.79	
Sept.	1. Chas. Forrestal.....	Broadway.....	Huron.....	Michigan.....			.14
Nov.	4. Chicago and Wisconsin Granite Quarrying Co.....				1.84		
	7. Chas. Forrestal.....	Michigan.....	Broadway.....	Milwaukee.....			.14½

SCHEDULE OF CONTRACTS—FOURTH WARD.

[illegible]

SCHEDULE OF CONTRACTS—FOURTH WARD—CONTINUED.

[illegible]

SCHEDULE OF CONTRACTS—FIFTH WARD.

DATE.	CONTRACTOR.	STREET	FROM	TO	(Granite paving blocks per square yard.
March 20.	Chicago and Wisconsin Granite Quarrying Co.				1.87

SCHEDULE OF CONTRACTS—SIXTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM	TO	Grading per cubic yard.	Graveling per cubic yard.	Gutter paving per square yard.	Planking per lineal foot.	Wood curbing per lineal foot.	Sodding per square yard.	Cedar block paving per square yard.	Alley paving per square yard.
May 22.	F. Vogt, Jr.	First	Walnut	Sherman	.13	.90	.43	.24				
22.	Jas. O'Connor and John O'Neill	First	Walnut	Sherman					.13	.11 1/4		
22.	J. F. Beers	First	Walnut	Sherman								
22.	F. Vogt, Jr.	Alley, block 36, Sherman's Ad	Sherman	Reservoir Ave	.21							.52
July 10.	John Disch.	Sixth	Galena	Walnut	.22							
10.	Jas. O'Connor and John O'Neill	Sixth	Galena	Walnut					.14			
10.	Pat. Shea.	Sixth	Galena	Walnut						.11		
10.	Henry Jante.	Alley, block 13, Sherman's Ad	Lloyd	Garfield Avenue.								.79
Aug. 21.	F. Vogt, Jr.	Alley, block 4, Sherman's Ad	Garfield Avenue.	North Avenue.								.74 1/2
21.	Henry Jante.	Alley, block 6, Alley, block 42, Sherman's Ad	Walnut	Sherman	.30							.55

SCHEDULE OF CONTRACTS—SIXTH WARD—CONTINUED.

DATE.	CONTRACTOR.	STREET.	FROM.	TO.	Grading per cubic yard.	Graveling per cubic yard.	Gutter paving per square yard.	Planking per lineal foot.	Wood curbing per lineal foot.	Sodding per square yard.	Cedar block pavement per sq. yard.	Alley paving per square yard.
Sept. 1.	Thos. Reilly	Walnut	Island Avenue.	Seventh					.13		1 01	
26.	Aug. Timm	Buffum	Reservoir Ave.	Lloyd	.18					.11		
26	F. Fogt, Jr.	Buffum	Reservoir Ave.	Lloyd			.47					
26	John T. Hoff	Buffum	Reservoir Ave.	Lloyd		.84½		.24				

SCHEDULE OF CONTRACTS—SEVENTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM	TO	Stone curbing per lineal foot.	Resetting 5-inch curbing per lineal foot.	Resetting 4-inch curbing per lineal foot.
May 22.	John H. Kearney.....	Mason.....	Jackeon.....	Lake Avenue.....	.64	.27	.13

SCHEDULE OF CONTRACTS—EIGHTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM	TO	Grading per cubic yard.	Gravelling per cubic yard.	Planking per lineal foot.	Gutter paving per square yard.	Alley paving per lineal foot.	Lighting lamps per lamp per year.
Feb.	11. P. R. Wolf.									9.96
April	17. A. Weidner.	Walker	Seventh ave.	Eleventh ave.	.16					
	17. Henry Vogt	Walker	Seventh ave.	Eleventh ave.		.77				
	17. Ed. Weidner	Walker	Seventh ave.	Eleventh ave.			.22 $\frac{3}{4}$			
	17. Jul. Duemke	Walker	Seventh ave.	Eleventh ave.				.46 $\frac{3}{4}$		
Aug.	7. A. Weidner.	Nineteenth ave	National ave.	South Pierce.	.20					
	7. L. Seymer.	Nineteenth ave	National ave.	South Pierce			.23			
	7. Julius Duemke.	Alley block 10 Walkers Point Addition	Third ave.	Fourth ave					.49 $\frac{1}{2}$	
Sept.	15. A. Weidner.	Eighteenth ave	National ave	Greenfield ave	.24					
	15. Julius Duemke	Eighteenth ave	National ave.	Greenfield ave		.64 $\frac{1}{2}$				
	15. Louis Pegler	Eighteenth ave	National ave.	Greenfield ave				.45		
	15. A. Weidner.	Eighteenth ave	National ave.	Greenfield ave			.22 $\frac{1}{2}$			

SCHEDULE OF CONTRACTS—NINTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM.	TO.	Grading per cubic yard.	Graveling per cubic yard.	Gutter paving per square yard.	Planking per lineal foot.	Cedar block pavement per sq. yd.	Wood curbing per lineal foot.	Lighting lamps per lamp per year.	Alley paving per square yard.
Feb. 23.	William Klein										11.48	
May 6.	Chas. Schmidt.	Cherry	Twenty-first	Randell	.11½							
22.	Chas. Schmidt.	Cherry	Twentieth	Twenty-first	.14½		.39½					
22.	F. Vogt, Jr.	Cherry	Twentieth	Twenty-first		.78		.23				
22.	Carl Schmidt.	Galena	Twentieth	Twenty-fourth	.14½	.84½						
22.	F. Vogt, Jr.	Galena	Twentieth	Twenty-fourth			.37					
July 14.	Thos. Reilly.	Walnut	Summer.	Sixteenth.					1.13			
14.	Patrick Drew	Walnut	Summer.	Sixteenth						12½		
14.	C. H. Sullivan.	Walnut	Summer.	Sixteenth.				.22				
Aug. 14.	Henry Vogt.	Cherry	Twentieth	Twenty-sixth.	.25	.99		.25				
14.	Edward Becker.	Cherry	Twentieth	Twenty-sixth.			.47					
14.	Henry Vogt	Twentieth	Cherry	Galena	.25	.99		.25				
14.	Ed Becker	Twentieth	Cherry	Galena			.45					
Sept. 4.	Carl Schmidt.	Alley, block 97.	Tenth.	Eleventh.	.29½							.64½

SCHEDULE OF CONTRACTS—NINTH WARD—CONTINUED.

DATE.	CONTRACTOR.	STREET.	FROM	To	Grading per cubic yard.	Graveling per cubic yard.	Gutter paving per square yard.	Planking per lineal foot.	Cedar block pavement per sq. yd.	Wood curbing per lineal foot.	Lighting lamps per lamp per year.	Alley paving per square yard.
Sept. 4.	F. Gottschalk.	N. alley, blk. 106.	Ninth.	Tenth.								.85
4.	J. T. Hoff.	N. alley, blk. 111.	Eleventh.	Twelfth.								.85
8.	F. Gottschalk.	S. alley, blk. 106.	Ninth.	Tenth.	.45							.70
8.	J. T. Hoff.	Alley, block 112.	Tenth.	Eleventh.	.40							
8.	F. Gottschalk.	Plymouth Av.	Ninth.	Tenth.	.45							.70
8.	John Clauder.	Alley, block 112.	Tenth.	Eleventh.								.60
18.	Jacob Weiner.	Plymouth Av.	Eleventh.	Twelfth.	.44							.74
Oct. 16.	John Denker.	N. alley, blk. 108.	Seventh.	Eighth.	.24							.50

SCHEDULE OF CONTRACTS—TENTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM.	To.	Grading per cubic yard.	Graveling per cubic yard.	Gutter paving per square yard.	Planking per square yard.	Gravel for street repairs per cu. yd.	Lighting lamps, per lamp per year.	Wood curbing per lineal foot.
Feb. 23.	Wm. Klein									11 48-100	
July 10.	Fred. Grokowsky	Fifteenth	Lee	Centre	.13						
10.	John Prier.	Fifteenth	Lee	Centre	.98	.45					
19.	Wm. Sherwood	Fifteenth	Lee	Centre				.22			
Aug. 10.	Ed. Becker	Gravel for street repairs							.95		
14.	F. Grokowsky	Sixteenth	Centre	Hopkins road (or street).	.14	1.16					
14.	Henry Vogt	Sixteenth	Centre	Hopkins road (or street).			.55				
14	Anton Kaspari	Sixteenth	Centre	Hopkins road (or street).				.22 3/4			
14	Fred. Grokowsky	Seventeenth	Centre	Hopkins road (or street).		1.18					
14	Henry Vogt	Seventeenth	Centre	Hopkins road (or street).			.55				
14	Henry Vogt	Eleventh	Centre	Wright	.25	1.15	.50				
14	Anton Kaspari	Eleventh	Centre	Wright				.22			
Sept. 1.	Jas. O'Connor and Jno. O'Neill	Teutonia Garfield Avenue. Wright									.14

SCHEDULE OF CONTRACTS—TENTH WARD—CONTINUED.

DATE.	CONTRACTOR.	STREET.	FROM	TO	Grading per cubic yard.	Graveling per cubic yard.	Gutter paving per square yard.	Planking per square yard.	(Gravel for street repairs per cu. yd.	Lighting lamps per lamp per year.	Wood curbing per lineal foot.
Oct. 2.	James Hoye.....	Seventh.....	Centre	Hadley.....				.24½			
2.	F. Vogt, Jr.....	Seventh.....	Centre	Hadley.....	.29						
2.	William Casper.....	Seventh.....	Centre	Hadley.....		1.24	.55				
Dec. 8.	Carl Schmidt.....	Fifteenth.....	Lee	Centre	.13						
8.	Carl Schmidt.....	Seventeenth.....	Centre	Hopkins.....		.94½					
8.	Geo. Schwarz and John Clauder.....	Sixteenth.....	Centre	Hopkins.....		1.00					

SCHEDULE OF CONTRACTS—ELEVENTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM	To	Grading per cubic yard.	Graveling per cubic yard.	Gutter paving per square yard.	Planking per lineal foot.	Cedar block paving per square yard.	Wood curbing per lineal foot.	Repaving gutters per square yard.	Lighting lamps per lamp per year.
Feb. 11.	John Birkle.....											9.00
May 15.	{ C. H. Sullivan and Jas. O'Donnell.....	Mitchell.....	First ave	Seventh ave					1.17		.19	
15.	B. Kelly.....	Mitchell.....	First ave	Seventh ave						.00 1/4		
Sept. 11.	John Dreischow.....	Orchard.....	Eighth ave.	Eleventh ave.				.22 1/2				
11.	L. Seymer.....	Orchard.....	Eighth ave	Eleventh ave.	.11							
11.	M. Heiden.....	Orchard.....	Eighth ave	Eleventh ave.		.53	.43					
11.	M. Heiden.....	Fourteenth ave.	Mitchell.....	Burnham	.18		.43					
11.	F. Hildebrand.....	Fourteenth ave.	Mitchell.....	Burnham		.49						
11.	L. Seymer.....	Fourteenth ave.	Mitchell.....	Burnham				.22 9-10				
22.	Julius Duemke.....	Grant.....	Ninth ave.	Burnham, Rogers & Fecher's subdivis.	.14	.39 1/2						
23.	Wm. Gutknecht.....	Bismarck ave	N. line Burnham, Rogers & Fecher's subdiv	Lincoln ave	.18 3/4							

SCHEDULE OF CONTRACTS—TWELFTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM	TO	Grading per cubic yard.	Graveling per cubic yard.	Gutter paving per square yard.	Planking per lineal foot.	Gravel for street repairs per cu. yd.	Lighting lamps per lamp per year.
Feb. 21.	Bernard Fritsch.	Lighting lamps								\$9.75
May 22.	Christ. Beck.	Gravel for street repairs.	repairs.						.75	.....
22.	F. Hildebrand	Gravel for street repairs.	repairs.						.50	.....
22.	F. Hildebrand	Gravel for street repairs.	repairs.						.59	.....
June 26.	John Thiede.	Clinton.	North line of S. E. $\frac{1}{4}$ Section 5.	Becher	.21 $\frac{1}{2}$					.....
26.	A. Weidner.	Clinton.	North line of S. E. $\frac{1}{4}$ Section 5.	Becher				.22		.....
July 10.	Christ. Beck.	Robinson Avenue.	Becher	N. line of lot 20 in Subd. of W. $\frac{1}{2}$ of S. W. $\frac{1}{4}$, Sec. 21	.06	9-10	.44 $\frac{1}{6}$	.23 $\frac{1}{3}$		.....
			Ward				.43			.....
Sept. 22.	C. Beck and H. Gerling.	Kenesaw	South Bay	Lincoln Avenue.	.14 $\frac{3}{4}$			.25		.....
22.	Julius Duenke.	Kenesaw	South Bay.	Lincoln Avenue.			.45	.41		.....

SCHEDULE OF CONTRACTS—THIRTEENTH WARD.

DATE.	CONTRACTOR.	STREET.	FROM	TO	Grading per cubic yard.	Graveling per cubic yard.	Cutler paving per square yard.	Planking per lineal foot.	Alley paving per square yard.	House drains per lineal foot.	Long water service per lineal foot.	Short water service per lineal foot.
May 22.	Wm. O'Donnell.	North Pierce.	Wright	Centre.	.09½							
22.	John T. Hoff.	North Pierce.	Wright	Centre.		.84						
22.	F. Vogt, Jr.	North Pierce.	Wright	Centre.			.39	.23				
22.	F. Vogt, Jr.	Clarke.	Buffum	Humboldt Av.	.14½		.39	.23				
22.	John T. Hoff.	Clarke.	Buffum	Humboldt Av.		.79½						
22.	F. Vogt, Jr.	Alley b'l'k 40, J. L. North Avenue.	Lee	Lee	.15				.53			
		Pierce's subdiv.										
July 10.	August Timm.	Alley b'l'k N, in subdiv. of E 40 acres of SW¼ Sec. 17 & alley b'l'k 9, W. A. Young's subdivision.			.19½				.50			
Sept. 15.	John T. Hoff.	Alley block 207, Lee.	Lee	Wright.								
		Wright's add'n.							.74½			
15.	F. Vogt, Jr.	Alley block 207, Lee.	Lee	Wright.								
		Wright's add'n.			.43							

SCHEDULE OF CONTRACTS—THIRTEENTH WARD—CONTINUED.

DATE.	CONTRACTOR.	STREET.	FROM	To	(Grading per cubic yard.	Graveling per cubic yard.	Cutter paving per square yard.	Planking per lineal foot.	Alley paving per square yard.	House drains per lineal foot.	Long water service per lineal foot.	Short water service per lineal foot.
Oct. 2.	August Timm.....	Alley blk 2, W. Clarke.....		Centre.....	}				.06			
9.	O. T. Sloteman.....	P. Young's sub-D Third.....		City limits.....						.39		
9.	P. H. Murphy.....	Third.....	Centre.....	City limits.....							.41	
9.	R. J. Finn.....	Third.....	Centre.....	City limits.....								.87

STREETS SPRINKLED—FIRST WARD.

STREET.	FROM.	TO.
North Water	Division	Pearson.
East Water	Division	Cherry Street Bridge.
Market	Division	North Water.
Broadway	Division	North Water.
Milwaukee	Division	North Water.
Jefferson	Division	Knapp.
Jackson	Division	Pleasant.
Van Buren	Division	Brady.
Cass	Division	Kewaunee.
Marshall	Division	Kewaunee.
Astor	Division	Brady.
Franklin	Division	Brady.
Farwell Avenue	Franklin	90 ft. N. of Irving Place.
Prospect Avenue	Division	Windsor Place.
North half Division	Milwaukee River	Juneau Place.
Knapp	Broadway	North Water.
Knapp	Milwaukee	Prospect Avenue.
Ogden	North Water	Franklin.
Lyon	Jackson	Webster Place.
Pleasant	Jefferson	Franklin.
Brady	Farwell Avenue	Prospect Avenue.
Brady	Astor	Marshall.
Royal Place	Farwell Avenue	Prospect Avenue
Dane Place	Farwell Avenue	Prospect Avenue.
Lafayette Place	Prospect Avenue	Terrace Avenue.

STREETS SPRINKLED—FIRST WARD—CONTINUED.

STREET.	FROM.	TO.
Terrace Avenue.....	Lafayette Place.....	Wyoming Place.
Albion	Prospect Avenue.....	Warren Avenue.
Kewaunee.	Cass	Racine.
Racine	Pleasant.....	Brady.
Cambridge Avenue.....	Farwell Avenue.....	Royal Place.
Warren Avenue.....	Lyon.....	Albion.
Brady	Van Buren.....	Marshall.
Brady	Racine	Farwell Avenue.
Jackson	Pleasant.....	Brady.
Cass	Kewaunee	Brady.

STREETS SPRINKLED—SECOND WARD.

STREET.	FROM	TO
N. $\frac{1}{2}$ Cedar, except fr. 8th to 9th.	West Water	Eighteenth.
State	Milwaukee River.....	Twenty-first.
Prairie	Third	Eighth.
Prairie	Ninth	Fifteenth.
Chestnut	Milwaukee River.....	Twenty-second.
Poplar	Third	Seventh.
Cold Spring ave.....	Tenth	Sixteenth.
S. $\frac{1}{2}$ Vliet.....	Third	Twenty-third.
Winnebago	Chestnut	Vliet.
West Water	Cedar	Third.
Third	Cedar	Vliet.
Fourth	Cedar	Vliet.
Fifth	Cedar	Vliet.
Sixth	Cedar	Vliet.
Seventh	Cedar	Vliet.
Eighth	Cedar	Vliet.
Ninth	Cedar	Vliet.
Tenth	Cedar	Winnebago.
Eleventh	Cedar	Vliet.
Twelfth	Cedar	Vliet.
Thirteenth.....	Cedar	Vliet.
Fourteenth	Cedar	Vliet.
Fifteenth	Cedar	Vliet.
Sixteenth	Cedar	Prairie.

STREETS SPRINKLED—THIRD WARD.

STREET.	FROM.	TO.
East Water	Wisconsin	Milwaukee River.
Broadway	Wisconsin	Milwaukee River.
Milwaukee	Wisconsin	Erie.
Jefferson	Wisconsin	Erie.
Jackson	Wisconsin	Menomonee.
Van Buren	Wisconsin	Detroit.
Cass	Wisconsin	Huron.
S. $\frac{1}{2}$ Wisconsin	Milwaukee River	C. & N. W. R. R.
Michigan	East Water	C. & N. W. R. R.
Huron	Milwaukee River	Cass.
Detroit	East Water	Beach.
Buffalo	East Water	Beach.
Chicago	East Water	Jackson.
Erie	East Water	Jackson.
Juneau	Milwaukee	C. & N. W. R. R.
Menomonee	Jackson	Erie.

STREETS SPRINKLED—FOURTH WARD.

STREET.	FROM	TO
West Water	Cedar	Menomonee River.
Second	West Water	West Water.
Third	Cedar	Fowler.
Fourth	Cedar	Fowler.
Fifth	Cedar	Fowler.
Sixth	Wells	Fowler.
Seventh	Cedar	Fowler.
Eighth	Wells	Hinman.
Ninth	Cedar	Grand ave.
Ninth	Sycamore	Clybourn.
Tenth	Cedar	Clybourn.
Eleventh	Cedar	Clybourn.
Twelfth	Cedar	Grand ave.
Thirteenth	Cedar	Clybourn.
Fourteenth	Cedar	Clybourn.
Fifteenth	Cedar	Clybourn.
Sixteenth	Cedar	Clybourn.
Seventeenth	Cedar	Clybourn.
Eighteenth	Cedar	Clybourn.
Nineteenth	Cedar	Clybourn.
First ave	Canal	Sixth Street Bridge.
Clermont	Muskego ave	Clybonrn.
Hinman	Fowler	W. line lot 7, block 137.
Fowler	West Water	Hinman.
Hill and Fowler	Clybourn	Tenth.

STREETS SPRINKLED—FOURTH WARD—CONTINUED.

STREET.	FROM	To
Clybourn	Milwaukee River	Fourteenth.
Sycamore	Milwaukee River	Thirteenth.
Grand ave	Milwaukee River	City limits.
Wells	Milwaukee River	City limits.
S. $\frac{1}{2}$ Cedar except bet. 8th & 9th.	West Water	Eighteenth.
Washington ave.	Cedar	Grand ave.
Reed	Menomonee River	S. line Fourth Ward.
Twenty-fourth	Wells	Cedar.

STREETS SPRINKLED—FIFTH WARD.

STREET.	FROM.	TO.
Barclay	South Water.....	Florida.
Barclay	Scott.....	Washington.
Ferry	East Water street bridge.....	Lake.
Clinton.....	South Water.....	Railroad.
Reed	River	Railroad.
Hanover	Oregon.....	Railroad.
Greenbush.....	Florida.....	Railroad.
Grove.....	Florida.....	Railroad.
East half First ave.....	Canal	Railroad.
South Water.....	Reed.....	Lake.
Lake	Hanover	South Water.
Oregon.....	Hanover	Barclay.
Florida	Barclay	First ave.
Virginia	Clinton.....	First ave.
Park	Clinton.....	First ave.
Pierce.....	Clinton.....	First ave.
National ave.....	East line of block 110.....	First ave.
Walker.....	Clinton	First ave.
Mineral	Clinton.....	First ave.
Washington	Railroad track.....	First ave.
Scott.....	Barclay	First ave.
Madison.....	Clinton.....	First ave.
North half Railroad.....	Clinton.....	First ave.
College Place.....	Hanover	Greenbush.
Street between blocks 53 and 54.		

STREETS SPRINKLED—SIXTH WARD.

STREET.	FROM.	TO.
Second	Sherman	North Avenue.
Third	Vliet	North Avenue.
Fourth	Vliet	Garfield Avenue.
Fifth	Lloyd	Garfield Avenue.
Fifth	Vliet	Harmon.
Sixth	Vliet	Cherry.
Sixth	Galena	North Avenue.
E. $\frac{1}{2}$ Seventh	Vliet	North Avenue.
N. $\frac{1}{2}$ Vliet	Third	Seventh.
Cherry	Second	Seventh.
Galena	Second	Seventh.
Walnut	Second	Seventh.
Sherman	Island Avenue	Seventh.
Reservoir Avenue	Island Avenue	Seventh.
Harmon	Second	Seventh.
Garfield Avenue	Seventh	W. l. of Kilbourn Park.
Point	Cherry Street Bridge	Canal.
Lloyd	Third	Seventh.
Island Avenue	Walnut	Garfield Avenue.
Dock	Pleasant Street Bridge	Railroad Track.
First	Sherman	Reservoir Avenue.
Cape	Dock	Point.
Holton	Garfield Avenue	Harmon.
Second	Cherry	Galena.
First	Lloyd	North Avenue.
Fourth	Garfield Avenue	North Avenue.

STREETS SPRINKLED—SEVENTH WARD.

STREET.	FROM	TO
River	Oneida	Division.
East Water.....	Wisconsin	Division.
Market.....	Mason	Division.
Broadway	Wisconsin	Division.
Milwaukee	Wisconsin	Division.
Jefferson	Wisconsin	Division.
Jackson	Wisconsin	Division.
Van Buren	Wisconsin	Division.
Cass	Wisconsin	Division.
Marshall	Wisconsin	Division.
Astor	Oneida	Division.
Waverly Place.....	Martin	Division.
Juneau Place	Astor	Division.
Juneau Place	Astor	Wisconsin.
North half Wisconsin	Milwaukee River.....	C. & N. W. R. R.
Mason	Milwaukee River.....	Astor.
Oneida	Milwaukee River.....	Astor.
Biddle.....	River	Juneau Place.
Martin	Milwaukee River.....	Juneau Place.
Johnson	River	Milwaukee.
South half Division	River	Juneau Place.

STREETS SPRINKLED—EIGHTH WARD.

STREET.	FROM.	TO.
W. $\frac{1}{2}$ First ave	Canal	Railroad.
Second ave	Pierce	Railroad.
Third ave	National ave	Railroad.
Third ave	National ave	Pierce.
Fourth ave	Park	Railroad.
Fifth ave	National ave	Railroad.
Sixth ave	Pierce	Park.
Sixth ave	National ave	Railroad.
Seventh ave	National ave	Railroad.
Eleventh ave	Railroad	Washington.
Virginia	First ave	Fourth ave.
Park	First ave	Seventh ave.
Pierce	First ave	Sixth ave.
National ave	First ave	Washington ave.
Walker	First ave	Seventh ave.
Mineral	First ave	Seventh ave.
Washington	First ave	W. line of Walkers Pt. Addition.
Washington	Ninth ave	Eleventh ave.
Scott	First ave	Seventh ave.
Madison	First ave	Seventh ave.
Eleventh ave	Washington	National ave.
North half Railroad	First ave	Eleventh ave.

STREETS SPRINKLED—NINTH WARD.

STREET.	FROM	To
West half Seventh	Vliet	Walnut.
Eighth	Vliet	Walnut.
Ninth	Vliet	Walnut.
Tenth	Mill	Walnut.
Eleventh	Vliet	Walnut.
Twelfth	Vliet	Walnut.
Thirteenth	Vliet	Fond du Lac ave.
Fourteenth	Vliet	Fond du Lac ave.
Nineteenth	Vliet	Walnut.
North half Vliet	Seventh	Twenty-seventh.
Mill	Seventh	Eleventh.
Cherry	Seventh	Eighth.
Cherry	Tenth	Twentieth.
Galena	Seventh	Twentieth.
South half Walnut	Seventh	Fond du Lac ave.
South half Fond du Lac ave.	Walnut	Twenty-second.
Walnut	Fond du Lac ave.	Twentieth.

STREETS SPRINKLED—TENTH WARD.

STREET.	FROM.	TO.
West half Seventh	Walnut.....	Lloyd.
Eighth	Germania.....	North Avenue.
Ninth	Walnut.....	Garfield Avenue.
Tenth	Walnut.....	North Avenue.
Eleventh	Walnut.....	Lee.
Twelfth	Walnut.....	Garfield Avenue.
Thirteenth.....	Fond du Lac Avenue.....	Wine.
North half Walnut.....	Seventh	Fond du Lac Avenue.
Sherman	Ninth	Tenth.
Lloyd	Eighth	Thirteenth.
Garfield Avenue	Seventh	Thirteenth.
North Avenue	Seventh	Teutonia.
Teutonia	Garfield Avenue	Hopkins Road.
Germania.....	Seventh	Ninth.
North half Fond du Lac Avenue.	Walnut.....	Twenty-second.
West half Seventh	Lloyd	Garfield Avenue.
Sherman	Eleventh	Twelfth.
Harmon	Ninth	Eleventh.
Eighth	North Avenue	Lee.
Wine.....	Ninth	Tenth.

STREETS SPRINKLED—ELEVENTH WARD.

STREET.	FROM	TO
W $\frac{1}{2}$ First ave.....	Railroad	Maple.
Second ave.....	Railroad	Mitchell.
Third ave	Railroad	Windlake ave.
Fourth ave	Railroad	Windlake ave.
Sixth ave.....	Railroad	Maple.
Seventh ave	Railroad	Maple.
Eighth ave.....	Greenfield ave	Mitchell.
S. $\frac{1}{2}$ Railroad	First ave	Muskego ave.
Mitchell.....	First ave	Eighth ave.
Lapham	First ave	Seventh ave.
Forest Home ave	Mitchell	Bismark ave.
Windlake ave.....	Mitchell	Fifth ave.
Maple.....	First ave	Eighth ave.

STREETS SPRINKLED—TWELFTH WARD.

STREET.	FROM.	TO.
Clinton.....	Railroad	Kinnickinnic ave.
Kinnickinnic ave.....	Clinton.....	Lincoln ave.
Reed.....	Railroad.....	Mitchell.
East half First ave.....	Railroad.....	Mitchell.
South half Railroad	Clinton.....	First ave.
Mitchell	Greenbush.....	First ave.
Maple.....	Kinnickinnic ave.....	Grove.
South Bay.....	Kinnickinnic ave.....	Kenesaw.
Hanover	Railroad	Lapham.
Orchard	Clinton.....	Greenbush.
Greenbush.....	Railroad.....	Lapham.

STREETS SPRINKLED—THIRTEENTH WARD.

STREET.	FROM.	TO.
Third	North ave	Centre.
North half North ave	Seventh	Booth.

REPORT
OF THE
CITY ENGINEER
FOR THE YEAR
1885.

REPORT OF THE CITY ENGINEER.

CITY ENGINEER'S OFFICE,
MILWAUKEE, January, 1886.

To the Honorable the Board of Public Works:

GENTLEMEN:—Pursuant to the requirements of the charter, I herewith respectfully present to you the annual report of the operations of the different departments under my charge for the year 1885.

STREET IMPROVEMENTS.

The entire length of the streets and alleys which have been improved during the year 1885 is $17\frac{503}{1000}$ miles, and have cost in the aggregate the sum of \$268,302.69.

The detail report of the assistant engineers upon the work you will find hereto attached.

Estimates of contemplated work in improving streets and alleys were also prepared for about $16\frac{781}{1000}$ miles in length.

The improvements which were made under this head during the year consisted of the following classified amount of work :

167,684 cubic yards of excavation.....	} at a cost of	\$46,985 46
74,663 cubic yards of filling.....		
49,932 cubic yards of gravel, at a cost of.....		36,033 24
21,147 square yards of granite paving, at a cost of.....		53,282 20
66,724 square yards of cedar block paving, at a cost of.....		55,686 18
790 square yards of McAdam paving, at a cost of.....		1,145 50
27,948 square yards of alley paving, at a cost of.....		18,006 26
51,526 square yards of gutter paving, at a cost of.....		22,496 23
12,580 square yards of sodding, at a cost of.....		1,277 73
20,460 lineal feet of stone curbing, at a cost of.....		12,324 22
23,652 lineal feet of wood curbing, at a cost of.....		2,729 00
75,150 lineal feet of sidewalk planking, at a cost of.....		18,336 67
Total cost		\$268,302 69

From this it will be seen that a great deal more of work was done in the line of street improvements in 1885 than in the previous year.

The highest, lowest and mean stage of the water in our rivers during each month for the year 1885 is given in the table below:

STAGE OF WATER DURING THE YEAR 1885.

MONTH.	HIGHEST—FEET.	LOWEST—FEET.	MEAN—FEET.
January	1.400	0.400	0.800
February	1.400	0.700	0.985
March	1.200	0.700	0.989
April	1.600	0.800	1.151
May	1.900	0.800	1.493
June	2.100	1.500	1.784
July	2.200	1.600	1.844
August	2.500	1.600	1.935
September	2.600	1.500	1.844
October	2.200	1.400	1.725
November	1.900	1.000	1.466
December	2.000	0.700	1.167
Year 1885	2.600	0.400	1.434

This indicates for the latter part of the year a much higher stage of water than in 1884.

WATER WORKS.

I herewith submit a statement showing the receipts and disbursements of the water department since its organization.

RECEIPTS OF THE WATER FUND.

Received from the sale of bonds	\$1,563,332 78
Received from City on account of bridge	20,000 00
Received from water pipe assessments up to Dec. 31, 1882	545,819 68
Received from water rates, ferrules, etc.	
Up to Dec. 31, 1884	\$1,446,248 15
Up to Dec. 31, 1885	240,027 63
	<hr/>
	\$1,686,275 78
Total receipts to date in Water Fund	<hr/>
	\$3,815,428 24

RECEIPTS OF NEW CONSTRUCTION FUND.

Received from the sale of bonds	\$150,000 00	
Received from water pipe assessments.		
From Dec. 31, 1882, to Dec. 31, 1884.....	47,051 94	
To Dec. 31, 1885.....	35,381 20	
From City orders, etc	1,149 63	
		<hr/>
		\$233,582 77
		<hr/>
Total receipts.....		\$4,049,011 01

DISBURSEMENTS.

Total cost of construction from August, 1871.		
Up to Dec. 31, 1883.....	\$2,386,873 40	
Up to Dec. 31, 1884.....	116,424 16	
Up to Dec. 31, 1885.....	86,543 06	
		<hr/>
		\$2,589,840 62
Stock on hand		13,891 41
Total cost of maintenance up to		
Dec. 31, 1883.....	\$655,021 96	
Dec. 31, 1884.....	96,497 03	
Dec. 31, 1885.....	94,609 74	
		<hr/>
		\$846,128 73
Stock on hand		6,321 57
Interest paid on water bonds out of water fund		
in 1880.....	\$48,493 50	
in 1881.....	63,506 50	
in 1882.....	50,000 00	
in 1883.....	100,000 00	
in 1884.....	102,055 01	
in 1885.....	97,065 00	
		<hr/>
		\$461,120 01
Amount paid towards retiring water bonds from fund		
in 1884.....	\$10,000 00	
in 1885.....	35,000 00	
		<hr/>
		\$45,000 00
Delinquent water pipe assessment on hand.....		16,479 59
Balance on hand in construction fund.....		8,472 06
Balance on hand in water fund.....		61,689 29
Balance in hand of collector		67 73
		<hr/>
		\$4,049,011 01

The classified expenditures for construction up to date have been as follows:

Reservoir.....	\$145,220 14
North Point Pumping Works.....	355,514 98
North Point Pumping Engines.....	267,935 97
River Pumping Works.....	6,067 09
High Service Pumping Works.....	26,972 19
High Service Pumping Engines.....	18,378 29
Pipe Distribution.....	1,598,845 11
North Street Bridge.....	88,779 08
Office expenditures and Instruments.....	15,111 63
Engineering and Salaries.....	62,526 12
Telegraph Line.....	1,050 92
Tunnel Intake.....	3,439 10
Total cost of construction.....	\$2,589,840 62

The following table will show the total amount of water pumped at the North Point Pumping Station and the revenue per million gallons received by the City thereof since 1874 :

YEAR.	TOTAL GALLONS OF WATER PUMPED.	REVENUE PER MILLION GALS.
1875.....	953,699,955	\$47 41
1876.....	1,557,313,492	41 90
1877.....	2,534,623,650	29 36
1878.....	3,241,395,935	26 68
1879.....	3,870,411,590	25 28
1880.....	4,490,454,297	25 06
1881.....	4,855,501,612	27 36
1882.....	5,362,000,765	32 77
1883.....	5,397,876,086	34 27
1884.....	5,351,549,821	38 35
1885.....	5,862,803,528	38 98

The total receipts of the Water Department for the year 1885 have been as follows:

For water rates.....	\$219,536 38
ferrules, meters and other miscellaneous items.....	11,281 97
street sprinkling for the year 1884.....	8,531 75
water rates by city orders.....	462 73
By delinquent rates, fines, etc.....	214 80
Total cash receipts during 1885.....	\$240,027 63

The total cash expenditures of the Water Department for the year 1885 have been as follows :

For maintenance.....	\$90,856 92
interest on water bonds.....	97,065 00
retiring water bonds.....	35,000 00
Total cash expenditures	<u>\$222,921 92</u>

The balances due the Water Department from various sources for the year 1885 are as follows :

From private consumers, water rates uncollected	\$177 28
the city—water rates uncollected.....	6,678 34
the city—for hydrands.....	20,260 00
the wards—for street sprinkling	9,628 00
Total balance due for 1885.....	<u>\$36,743 62</u>

The following statement shows the actual cost of maintenance of the different branches of the Water Department for the year 1885, giving credits only for stock on hand, but not for any cash received for any work done or material furnished or sold :

North Point Pumping Engines.....	\$45,281 55
North Point Pumping Works	1,844 75
High Service Pumping Engines.....	9,423 62
High Service Pumping Works	591 22
Distribution	12,245 13
Reservoir.....	2,065 85
North Street Bridge.....	960 00
Telephone Line.....	227 50
Meters	6,980 31
Collector's Office.....	11,356 33
Machine Shop	632 84
Ferrules and Boxes.....	2,952 39
Water rates refunded.....	48 25
Making a total cost of.....	<u>\$94,609 74</u>

\$10,715.98 of this amount was received back in cash for meters, ferrules, boxes and grass sold during the year.

The total expenditures for construction for the year was as follows (no deductions) :

Extension of Water Mains.....	\$69,788 45
North Point Pumping Station.....	16,707 27
High Service Pumping Engines.....	40 00
Tunnel Intake.....	3,360 30
Total expenditures for construction.....	\$89,896 02

Of this amount \$35,381.20 have been assessed against property which has been benefitted by the laying of water mains and which will be returned to the construction fund.

NORTH POINT PUMPING WORKS.

The improvements which were commenced during the previous year at this station have been completed. A battery of three steel tubular boilers of 5½ feet diameter by 22 feet in length were constructed and set upon proper foundations in the new boiler house. The work was let to J. W. Eviston of this city, who completed the same in time to put the same into service on July 3d, since which date they have been used alternately with the south battery and have given first-class satisfaction. Their total cost has been \$9,764.11.

The manner of delivering coal into the sheds has been greatly changed by constructing a separate coal road leading to a chute, through which the coal is run to dump cars and thence conveyed by an elevator track to any part of the coal sheds. This change permits the unloading of three wagons at one time and the handling of four times as much coal into the sheds by one man, than what could be done heretofore, thus facilitating all work connected with the delivery of the coal, which will no doubt have some influence upon the price of coal at this station hereafter, besides doing away with unsightly platforms and adding to the appearance of the station. This improvement was put in at an expense of \$3,265.00.

Considerable work has also been done in further grading down the bluff, making a roadway to the new coal chute, and in parking the grounds around the water tower. By properly sodding the bluff and by setting out some trees next spring, this station will be made one of the handsomest spots in our already beautiful city.

The new machine shop has been found more convenient and better adapted for its purposes than the old one, which is now used as a carpenter shop. A

new Whitcomb planer has been added to the tools during the year. The pumping engines at this station are and have been in good first-class order and have needed no repairs of any note.

The amount of water pumped and of coal consumed for the past eight years is shown in the following table :

YEAR.	TOTAL GALLONS PUMPED.	ANNUAL INCREASE IN GALLONS.	TOTAL POUNDS OF COAL CONSUMED.	ANNUAL INCREASE OR DECREASE OF COAL.
1878....	3,241,395,935	706,772,285	6,241,510	INCREASE. 1,158,510
1879....	3,870,411,590	629,015,655	7,456,870	1,215,360
1880....	4,490,454,297	620,042,707	8,470,000	1,013,130
1881....	4,855,501,612	365,047,315	9,401,520	931,520
1882....	5,362,000,765	506,499,153	9,216,450	DECREASE. 185,070
1883....	5,397,876,086	35,875,321 DECREASE.	8,789,300	427,150
1884....	5,351,549,821	46,326,265 INCREASE.	8,804,500	INCREASE. 15,200
1885....	5,862,803,528	511,253,707	9,457,100	652,600

This indicates, compared with 1884, an average daily increase of the consumption of about 1,400,000 gallons.

The total duty of the three engines for the year, allowing for no deductions of any kind, either for coal used in starting or banking fires or for steam used for engine in the machine shop, was 82,991,403 foot pounds per 100 pounds of coal.

Some considerable trouble was again experienced with anchor ice in the supply pipe at and near the crib last winter. The season having been an unusually severe one, at times great difficulty was experienced in getting tugs to break their way through the ice in the rivers and the bay to reach the crib in time to afford relief, at one time there being but two hours' supply of water on hand when the difficulty was overcome.

Fearing a recurrence of the trouble, I placed a boiler on the crib immediately over the intake pipe, since which time we have had no serious difficulty in getting rid of the anchor ice, all resistance to the flow of the water being overcome in from 20 to 60 minutes after steam was forced down into the main.

In the early part of this winter some 400 feet of the pier leading to the crib was washed away by a heavy storm, leaving nothing but the piles. The repair of this break was immediately begun by our own men and completed sufficiently to permit the reaching of the crib, when it became absolutely necessary to do so. During the coming season, that part of the pier which was not rebuilt two years ago, should be reconstructed, the piles and timbers having become almost useless.

HIGH SERVICE PUMPING STATION.

The amount of water pumped and of coal consumed at this station since the same has been in service, is shown by the annexed table :

YEAR.	TOTAL GALLONS PUMPED.	DAILY AVERAGE.	TOTAL POUNDS OF COAL CONSUMED.
Last ½ 1878.....	24,925,983	134,011	109,645
1879.....	62,200,870	174,232	207,290
1880.....	108,982,237	297,765	320,930
1881.....	171,749,723	477,082	415,630
1882.....	231,546,137	634,373	450,875
1883.....	293,609,156	804,408	510,850
1884.....	327,227,462	894,064	512,740
1885.....	507,789,967	1,393,549	650,044

The new Allis pump has been in continuous operation during the entire year with but very few hours of interruption. It is in good condition and order and has needed no repairs of whatever kind. The old Cope & Maxwell pump is now being overhauled to get a better duty and to give it greater capacity, so that it may be used as a reserve at the present works.

During the year numerous complaints about the entire lack of pressure in the water supply were received from water takers in the northwesterly district of the city, and as the mains were extended further into this high district these complaints increased.

There is no doubt that when the present high service works were erected, they were intended to supply water only to a high district in the westerly end

of the Fourth and Second Wards, and were designed and located accordingly. The territory now supplied from this station is, no doubt, almost double that which it was originally intended to benefit. The territory lying north, northeasterly and northwesterly from this district is equally high and higher than that now supplied, besides covering three times the area and containing four times the population. As mains are being rapidly laid into this district, there will be an increased demand for better pressure.

In view of these facts, I carefully considered all questions involved and recommended to the Common Council the erection of a new high service station one and one half miles northeast of the present station, which point is also that much nearer to the supply at the reservoir and at the same time centrally in the territory which will require a higher pressure, adding, that when the machinery at the new station had been put into service, operated by the force in charge of the present station, the machinery of the same should be removed to the new and the old station be abandoned.

The cost of changing the present plant so as to adapt it to the placing of additional machinery with the cost of the laying of new mains adequate for supplying the pumps and that of the force mains sufficient to supply the future high service district of the city, would be almost double that of a similar station with the same proportionate conveniences at the new proposed location. As there is no question that in the practice of economy sooner or later such change must be made, it has been deemed best to proceed at once with the erection of the station, and provisions are now being made to enable the work to be carried on during the coming season, and it is hoped that a year hence there will be no longer cause for complaints.

RESERVOIR.

The reservoir is and has been in good order and condition and no repairs or work of any kind has been needed. A new thirty-inch main has been laid around the reservoir, connecting the influent with the effluent pipe, and the use of the twenty-four-inch main running through the reservoir has been discontinued.

The length of this main is 1,413 feet and was laid by the water department force at a total cost of \$2,452.77.

Some attention will be paid towards beautifying the park around the reservoir next year, the grounds are naturally handsome and need but little to beautify them and make them accessible for the enjoyment of the public.

WATER MAINS.

Fully as many mains were laid in 1885 as during the year previous, viz : 38,784 feet of six inch, 8,615 feet of eight inch, 2,059 feet of twelve inch and 1,413 feet of thirty inch, making now a total of $120\frac{552}{1000}$ miles laid in the city.

The six inch main on Mitchell street from First to Sixth ave., previous to the paving of said street, was taken up by the Water Department force and replaced by an eight inch main, making now a continuous eight inch main pipe the entire length of Mitchell street.

During the construction of the Kinnikinnic ave. bridge the contractor completely fractured the twelve inch main crossing the river near said bridge. As soon as possible, with the aid of Messrs. Thacher & Breyman, of Toledo, the break was closed by two half sleeves at a total expense of \$678.99. A perfect joint was made and water was turned on through the main nine days after the first examination of the pipe was made.

Nearly all of the extra double steamer hydrants were put in during the year. There are now in service 94 double and 919 single nozzled hydrants.

Having again called attention to the necessity of another supply main from the pumping works down into the business section of the east and west division of the city, authority was given to purchase the necessary thirty-six inch pipe therefor. Bids were called for and on January 5th, a contract for 5,000 tons of water pipe of various sizes was awarded to the Cin. and Newport Iron and Pipe Co. As early as the weather will permit, the laying of the 36-inch main, which will be nearly two miles in length, will be commenced.

WATER WASTE.

Nothing new could be said upon the subject. The useless waste of water is still going on. The hoped-for legislation last winter, failed to materialize

and resistance to the metering of water has arisen. It appears that a larger waste will be necessary to secure a proper support in the checking of the same. Meters however are continually being placed where deemed best and necessary.

BRIDGES.

As soon as the necessary funds were on hand, bids were received for replacing the old wooden structure over the river on Kinnikinnic ave. with an iron bridge on stone foundation. Contracts were awarded to C. H. Starke for constructing the substructure, consisting of stone center pier and abutments with protection pier for the sum of \$26,500. Work hereon was commenced about the middle of October, and the same was completed before the close of the year.

The channel being very narrow at this point, and the avenue crossing the same where it makes quite a bend and at a distance less than 150 feet from a double track railway bridge, it was thought best to make one side of the draw longer than the other, to permit the passage of large class vessels. The contract was awarded to the Penn Bridge Co. for \$6,050 for a 150 foot bridge, one draw being 65 feet and the other 85 feet in length. The bridge is being erected at the present time.

On September 22d a contract for a stone retaining wall at the end of the canal in the Sixth Ward was awarded to W. T. Casgrain for the sum of \$5,699. This stone wall, which is about 110 feet in length, and an eight feet diameter sewer which was built in connection with, obviates the necessity of the bridge across the end of the canal, the same has therefore been removed and the roadway filled up to grade.

On December 4th bids were received for replacing the frame bridge at Sixth ave. over the Burnham canal with a stone and iron structure. The contract for the substructure was let to C. H. Starke for the sum of \$21,450 and that for the draw bridge to A. T. Riddell for \$6,571. The bridge, which will be twenty feet longer than the old one, will also have a foot way on each side. Work is to be finished by April 1st, 1886.

During the coming year, Pleasant street bridge should be replaced by an iron structure. The wood bridge was erected in 1870, and certainly has outlived its strength.

It may also be necessary to construct a new bridge on Muskego ave., if the South Menomonee Canal should be extended westerly, and to replace the light iron bridge now spanning the North Menomonee on this same highway with a bridge more suitable to the heavy travel which is crossing here daily.

There should also some action be taken in the near future, looking towards the erection of a permanent viaduct over the Menomonee Valley, connecting the west with the south division of the city. Singular as it may appear, yet it is a fact, that there is but one safe highway connecting the two largest sections of our city, besides which there are only two others, of which one however is entirely unsafe on account of the large number of tracks, which are constantly in use, crossing the same. The interest of these two sections demand that additional facilities be afforded in reaching one from the other by a direct and safe crossing, and if possible, at a place where there will be no interruption of any kind to travel. As all the old bridges will have been replaced by substantial stone and iron structures in about a year hence, no further expenditures will be necessary in that direction and available funds can then be used for such new structure.

SPECIAL SEWERS.

Work on this branch of our public improvements progressed during the year much more satisfactory than heretofore. Late in the year 1884, authority was given the Board of Public Works to construct the pump well, gate well, conduits and wier without formal contract. The city proceeded with this work at once, engaging the necessary tools. Three drivers were used in driving the necessary piles and sheeting, and work progressed very satisfactorily until extreme cold weather set in. During January, February and March, the temperature ranged mostly from ten below freezing to twenty below zero, and but little work could be done. Aside from this, no delay was experienced, and after the five-inch matched sheeting had been driven through the sand to a

depth of 32 feet below water line, no difficulty was had in excavating the space of 36 by 40 feet through sand to the required depth, although the river and lake were but from 75 to 150 feet from the work. The work where it was deemed best was made stronger than what was at first planned and finished at a saving of over \$3,000 from the lowest bid received for the work. A discharge channel was constructed in connection with this work.

On April 18th a contract was let to M. Davelaar for the construction of an engine house, boiler house, coal house and stack for the sum of \$11,300. This work was satisfactorily finished by July 30th.

E. P. Allis, who had the contract for the engine, pumps and boilers, completed the erection of the same on July 23d, and the pumps were started on August 1st, giving so far the greatest satisfaction. They have been operated during the day hours only, and under the charge of Mr. A. Lieber, chief engineer, formerly assistant engineer at the North Point Pumping Works. The foul water pumped is taken from the Menomonee river at First avenue bridge, and although the pump has been running only during the day hours, considerable improvement has been noticed. No real benefit however is expected until the west ends of the Burnham and the South Menomonee canal are reached with the sewer, which will be some time during the present year if sufficient funds can be had for the purpose.

Section No. 2 of the special sewer was completed about February 1st, by one of the sureties of the original contractor.

The party who had in December, 1884, received the contract for constructing a part of section 4 of the sewer, completed by the middle of May about 950 feet of the same, when he was released from his contract by the Common Council on account of his inability to complete the work. The uncompleted part of the contract, excepting the connection with section No. 2, was awarded to F. S. Blodgett for the sum of \$14.90 per foot, who is now pushing the work towards completion.

It will take about 4,900 feet of sewer to reach the Burnham and South Menomonee Canals from this point. The entire work on the special sewer has to date cost the aggregate sum of \$187,268.34.

SEWERS.

During the year 1885 there were laid 10,278 feet of brick and 38,701 feet of pipe sewer, or a total of 48,979 feet, or $9\frac{278}{1000}$ miles of sewer at a total cost of \$99,483.68.

The total amount of sewers laid in the city now is $127\frac{506}{1000}$ miles, and has cost the sum of \$1,486,094.74.

The reports of the assistant engineers, hereto attached, to which I would refer you, give all the detail as to location, size, etc.

The entire available fund for the Washington ave. sewer, raised by a special tax of one mill, was set aside for constructing the outlet of the same. The first proposed route for this outlet run through a large ledge of lime rock and the grade for the same being exceedingly steep, it was deemed best to change the plan so as to place a large shaft at the present outlet of the sewer, collecting the water there and thence leading it southeasterly on to Fowler street to Twenty-fifth, and thence to the Menomonee river. The contract for this work was awarded to Messrs. Rycraft & McGarrigle for the sum of \$30,000. The same to be finished by April 1, 1886.

With this outlet finished and some 2,000 feet of the sewer extended northward, the same will become a great benefit in laying a large part of the low lands in the Ninth and Tenth Wards dry.

In addition to an act passed authorizing the levy of one mill for this and other large sewers on the West Side, a similar act was passed for the South Side, creating a fund for the building of a relief sewer on Washington street, from Second avenue easterly to the waters of Milwaukee river. On account of opposition raised to the proposed route of the sewer, no work was done. I would recommend an early determination of the question involved, so that work may be commenced upon this important outlet to accumulating surface waters.

A large number of main trunk sewers will soon have to be constructed, to afford relief for districts now being rapidly settled up and the drainage of which cannot be conducted into our already overcharged sewers.

The expense to begin with will be a large one, but one that must be met with ere long.

In closing, I wish to express to my assistants my appreciation of their efforts and their attention to their duty.

Respectfully submitted,

G. H. BENZENBERG,

City Engineer.

G. H. Benzenberg, City Engineer:

The following is a statement of office work performed during the year 1885:

Plans and specifications for coal chute and trestle work at North Point Pumping Works.

Plans and specifications for foundation of engine and buildings, and for boiler settings at Jones' Island Pumping Works (Menomonee Special Sewerage Works).

Plans and specifications for a stone centre pier and abutments and timber protection pier, for a bridge across the Kinnikinnic river at Kinnikinnic ave., and general plans and specifications for a wrought iron swing bridge for the same.

Plans and specifications for a stone centre pier and abutments and timber protection pier for a bridge across Burnham's canal at Sixth ave., and general plans and specifications for a wrought iron swing bridge for the same.

Plans and specifications for a stone retaining wall and sewer outlet on the south side of Dock street.

Plans for grading and improving Juneau Park.

Plans and specifications for a fountain basin for the Eighth Ward Park.

Plans and specifications for a section of the Washington ave. sewer tunnel: including plans for shaft at change of grade, shaft for connecting the single and double sewers, and sewer outfall at Menomonee river.

Plans and specifications for borings for proposed new intake at White Fish Bay.

Plans and specifications for boiler settings and smoke connection to stack ; also for a battery of new boilers, at North Point Pumping Works.

Plans for new 30-inch force main around the reservoir, including special castings.

Plans and specifications for a part of Section No. 4 of the Menomonee Special Sewerage Works.

REPORT
OF
STREET IMPROVEMENTS
IN THE
EAST DIVISION AND WEST DIVISION A,
FOR THE YEAR
1885.

STREET AND ALLEY IMPROVEMENTS.

EAST DIVISION.

During the year 1885 the following street and alley improvements have been completed in the First Ward :

STREET.	FROM.	TO.
Lyon.....	Cass	Webster Place.
Knapp	Jefferson	Marshall.
Cramer.....	North ave	Park Place.
Maryland	Greenwich.....	Bellevue Place.
Murray ave.....	Bellevue Place	Park Place.
Bradford	Murray ave.....	Frederick.
Prospect ave.....	Juneau ave.....	Albion.
N. & S. alley block 153.....	Juneau ave.....	Knapp.

Making a total length of improved streets and alleys of 9,070 lineal feet, which required :

31,075 cubic yards of excavation.....	} at a cost of	\$9,748 40
17,667 cubic yards of filling.....		
6,479 cubic yards of gravel, at a cost of.....		5,507 15
6,513 square yards of gutter paving, at a cost of.....		2,930 85
625 square yards of alley paving, at a cost of.....		312 50
9,612 square yards of cedar block paving, at a cost of.....		6,247 80
6,823 square yards of sodding, at a cost of.....		682 30
5,614 lineal feet of wood curbing, at a cost of		561 40
3,969 lineal feet of stone curbing, at a cost of		2,381 40
556 lineal feet of stone curb reset, at a cost of		69 50
7,542 lineal feet of sidewalk planking, at a cost of		1,885 50

STREET IMPROVEMENTS.

During the year 1885 the following street improvements have been completed in the Third Ward :

STREET.	FROM.	TO.
Broadway	Buffalo	Michigan.
Michigan	Broadway	Milwaukee.

Making a total length of improved streets of 1,574 lineal feet, which required :

10,969 square yards of granite block pavement, at a cost of..... \$27,405 00

STREET IMPROVEMENTS.

During the year 1885 the following improvements have been completed in the Seventh Ward :

STREET.	FROM.	TO.
Mason	Jackson	Juneau Place.
Jefferson	Martin	Biddle.
Biddle.....	Milwaukee	Jefferson.
Astor	Biddle.....	Oneida.
Biddle.....	Astor	Juneau Place.

Making a total length of streets improved of 2,535 lineal feet, which required :

1,844 cubic yards of excavation....	} at a cost of	\$679 25
873 cubic yards of filling.....		
1,200 cubic yards of gravel, at a cost of.....		900 00
1,985 square yards of gutter paving, at a cost of.....		794 00
3,784 square yards of sodding, at a cost of.....		378 40
4,014 lineal feet of stone curb, at a cost of		2,408 40
1,105 lineal feet of stone curb reset, at a cost of		138 12
680 lineal feet of sidewalk planking, at a cost of		170 00

STREET AND ALLEY IMPROVEMENTS.

WEST DIVISION A.

During the year 1885 the following street and alley improvements have been completed in the Fourth Ward :

STREET.	FROM.	TO.
Twenty-fifth	Sycamore	Clybourn.
Sycamore	Twenty-fifth	Thirtieth.
Clybourn	Twenty-fifth	Washington avenue.
Twenty-fifth	Wells	Cedar.
Cedar	Twenty-fourth	Twenty-fifth.
Grand avenue	Twenty-first	Washington avenue.
North Canal	Muskego avenue	Seventeenth.
Muskego avenue	Canal street	R. of way C., M. & St. P. R'y.
E. and W. alley, block 136	Eighth	A point 175 feet E. of 8th
E. and W. alley, block 63	Fifth	Sixth.
N. and S. alley, block 63	Grand avenue	Wells.
E. and W. alley, block 56	Second	Third.
N. and S. alley, block 56	Wells	North end of alley.
N. and S. alley, block 6	Sycamore	Clybourn.

Making a total length of improved streets and alleys of 10,638 lineal feet, which required :

20,662 cubic yards of excavation, }	at a cost of	\$6,555 60
12,116 cubic yards of filling, }		
4,443 cubic yards of gravel, at a cost of		3,998 70
790 cubic yards of broken stone, at a cost of		1,145 50
4,532 square yards of gutter paving, at a cost of		2,039 40
13,228 square yards of cedar block pavement, at a cost of		8,598 20
4,322 square yards of granite pavement, at a cost of		11,237 20
4,446 square yards of alley pavement, at a cost of		2,220 00
1,435 lineal feet of wood curb, at a cost of		172 20
7,487 lineal feet of stone curb, at a cost of		4,941 42
915 lineal feet of stone curb, reset, at a cost of		114 42
9,150 lineal feet of sidewalk planking, at a cost of		2,287 50

STREET AND ALLEY IMPROVEMENTS.

EAST DIVISION.

During the year 1885 estimates were prepared for improving the following streets and alleys in the First Ward :

STREET.	FROM	To
Windsor Place	Cambridge ave	Newhall.
Lafayette Place.....	Oakland ave.....	Prospect ave.
Greenwich.....	Oakland ave.....	Maryland.
Prospect ave.....	Maryland	Bradford.
Prospect Place.....	Bradford	N. line block 6, Burke's subdiv.
Bradford	Maryland	Lake ave.
Marshall	Hamilton	Highland Place.
Juneau ave	Van Buren	Prospect ave.
N. and S. alley block 182.....	Knapp	Juneau ave.
N. and S. alley block 128.....	Ogden	Knapp.
N. and S. alley block 223.....	Windsor Place.....	Irving Place.
N. and S. alley block 222.....	Windsor Place.....	North ave.
West alley block 195	Brady	Kewaunee.
N. and S. alley block 237.....	Dane Place.....	Royal Place.

Making a total length of streets and alleys to be improved of 10,022 lineal feet, which will require :

35,675 cubic yards of cutting.
 6,112 cubic yards of filling.
 8,317 cubic yards of gravel.
 7,047 square yards of gutter pavement.
 4,010 square yards of cedar block pavement.
 2,840 square yards of alley pavement.
 2,277 square yards of sodding.
 332 lineal feet of stone curb.
 1,098 lineal feet of stone curb to be reset.
 11,059 lineal feet of wood curb.
 12,542 lineal feet of sidewalk planking.

STREET AND ALLEY IMPROVEMENTS.

During the year 1885 estimates were prepared for improving the following streets and alleys in the Third Ward :

STREET.	FROM	To
Chicago	Broadway	Milwaukee.
N. & S. alley, block 37	Detroit.....	Buffalo.
N. & S. alley, block 42	Buffalo.....	Chicago.

Making a total length of streets and alleys to be improved of 989 lineal feet, which will require :

59 cubic yards of cutting.
 2,063 cubic yards of filling.
 366 square yards of gutter pavement.
 1,133 square yards of alley pavement.
 120 lineal feet of sidewalk planking.

STREET AND ALLEY IMPROVEMENTS.

During the year 1885 estimates were prepared for improving the following streets and alleys in the Seventh Ward :

STREET.	FROM	To
Juneau ave	Van Buren.....	Prospect ave.
Alley, block 57.....	Johnson.....	Martin.
Alley, block 53.....	Biddle.....	Martin.

Making a total length of streets and alleys to be improved of 2,471 lineal feet, which will require :

24 cubic yards of cutting.
 1,018 cubic yards of filling.
 3,990 square yards of cedar block pavement.
 1,273 square yards of alley pavement.
 2,372 square yards of sodding.
 1,438 lineal feet of stone curb.
 174 lineal feet of stone curb to be reset.
 1,603 lineal feet of sidewalk planking.

STREET AND ALLEY IMPROVEMENTS.

WEST DIVISION A.

During the year 1885 estimates were prepared for improving the following streets and alleys in the Fourth Ward :

STREET.	FROM.	TO.
Grand ave.....	Washington ave.....	Western ave.
Third	Cedar	Everett.
Sycamore	Fourth	Second.
Clybourn	Washington ave.....	Thirtieth.
Sixth.....	Hill	Viaduct C., M. & St. P. R'y.
N. and S. alley block 4.....	Sycamore.....	Clybourn.
N. and S. alley block 193.....	Wells	Cedar.
N. and S. alley block 54.....	Cedar	Wells.
N. and S. alley block 61.....	Grand ave.....	Wells.
E. and W. alley block 61	Fourth	Third.
N. and S. alley block 62.....	Grand ave.....	Wells.
E. and W. alley block 62	Fifth.....	Fourth.
N. and S. alley block 60	Grand ave	Wells.
E. and W. alley block 60	Third.....	Second.
N. and S. alley block 77.....	Sycamore.....	Clybourn.
E. and W. alley block 77	Fifth	Fourth.
N. and S. alley block 186.....	Wells.....	E. and W. alley.

Making a total length of streets and alleys to be improved of 10,868 lineal feet, which will require :

14,992 cubic yards of cutting.
 6,622 cubic yards of filling.
 1,449 cubic yards of gravel.
 1,648 square yards of gutter pavement.
 8,507 square yards of alley pavement.
 13,365 square yards of granite pavement.
 16,000 square yards of cedar block pavement.
 6,988 square yards of sodding.
 3,717 lineal feet of stone curb to be reset.
 5,825 lineal feet of stone curb.
 2,194 lineal feet of sidewalk planking.

RECAPITULATION

Of work estimated and completed in the East Division and West Division A.

The total length of streets and alleys improved during the year 1885 was 23,817 lineal feet, or 4.511 miles, divided as follows :

East Division	2.496 miles.
West Division A	2.015 miles.

Which required :

53,581 cubic yards of excavation, }	} at a cost of	\$16,983 25
30,656 cubic yards of filling, }		
12,122 cubic yards of gravel, at a cost of		10,405 85
790 cubic yards of broken stone, at a cost of		1,145 50
13,030 square yards of gutter paving, at a cost of		5,764 25
22,840 square yards of cedar block pavement, at a cost of		14,845 00
5,065 square yards of alley pavement, at a cost of		2,532 50
15,291 square yards of granite block pavement, at a cost of		38,642 20
10,607 square yards of sodding, at a cost of		1,060 70
7,049 lineal feet of wood curb, at a cost of		733 60
15,470 lineal feet of stone curb, at a cost of		9,731 22
2,576 lineal feet of stone curb reset, at a cost of		322 04
17,372 lineal feet of sidewalk planking, at a cost of		4,343 00
Total cost		\$106,509 11

RECAPITULATION

Of work estimated but not completed in the East Division and West Division A.

The total length of streets and alleys for which estimates were prepared in the year 1885 is 24,348 lineal feet, or 4.611 miles, divided as follows :

East Division	2.553 miles.
West Division A	2.058 "

Which require :

50,750 cubic yards of cutting.
15,815 cubic yards of filling.
9,766 cubic yards of gravel.
9,061 square yards of gutter pavement.
24,000 square yards of cedar block pavement.
13,365 square yards of granite block pavement.
13 753 square yards of alley pavement.
11,637 square yards of sodding.
11,059 lineal feet of wood curb.
7,595 lineal feet of stone curb.
4,989 lineal feet of stone curb to be reset.
16,459 lineal feet of sidewalk planking.

STREET PAVEMENTS.

During the year 1885 the following streets were paved with

GRANITE BLOCKS.

Broadway, from Michigan to Buffalo streets.

Michigan, from Broadway to Milwaukee streets.

North Canal, from Muskego ave. to Seventeenth street.

CEDAR BLOCKS.

Prospect ave., from Juneau ave. to Albion street.

Grand ave., from Twenty-first to Washington ave.

Making a total length of 7,194 lineal feet.

Broadway, Michigan street, Prospect ave. and Grand ave. had been paved before with pine blocks or lime stone, a length of 5,544 lineal feet, leaving a length of 1,650 lineal feet added to the paved streets of the West Division A.

REPAVING AND REPAIRING.

The following is the amount of repaving done by the different Ward foremen in their Wards :

WARD.	Square yards of wood pavement relaid.	Square yards of stone gutters and alleys relaid.
First		600
Third	797	3,278
Seventh		2,638
Fourth	3,175	134

PROFILES

Have been made and levels run for establishing grade on the following streets and alleys during the year 1885 :

STREET.	FROM.	TO.
Bradford	Oakland ave.....	R. R. track.
Summit Place.....	Bartlett	R. R. track.
Bellevue Place	Oakland ave.....	R. R. track.
Bartlett	North ave	N. line of Lake Shore Subd.
Newhall.....	North ave	N. line of Lake Shore Subd.
Summit Place.....	Maryland	Glen ave.
Bellevue Place.....	Maryland	Glen ave.
Park Place	Maryland	Glen ave.
Farwell Place.....	Bradford	Park Place.
Prospect Place.....	Bradford	Park Place.
Stowell Place	Bradford	Park Place.
Glen ave	Bradford	Park Place.
Sycamore	Twenty-fifth.	E. line Notre Dame Subd.
North Canal.....	Muskego ave	Seventeenth.
Alley, block 193.....	Wells	Cedar.
West alley, block 195.....	Kewaunee.	Brady.
Sixth.	Hill	Fowler.
Alley, block 82.....	Fowler	Clybourn.
Fifth.....	Fowler	Sycamore.
Second.....	Alley, block 85.....	Alley, block 75.
Clybourn	Alley, block 75.....	Alley, block 74.
Cedar	Washington ave	Western ave.
Thirty-third	Wells	Cedar.
College ave.....	Grand ave	Cedar.

Making a total length of 26,950 lineal feet, or 5.10 miles.

Respectfully submitted,

CHARLES J. POETSCH,

Ass't City Engineer.

To G. H. BENZENBERG, Esq.,

City Engineer.

WEST SEWERAGE DISTRICT--A.

Statement showing the number of lineal feet of Sewers built during the year 1885, and cost of same.

DATE OF CONTRACT. 1885	NAME OF		LOCATION OF SEWERS.			MANHOLES.	BRICK SEWERS. DIMENSIONS.		CEMENT PIPE SEWERS. DIMENSIONS.			TOTAL LENGTH OF SEWERS.		COST OF SEWERS CHARGEABLE TO		COST OF INSPECTION.	TOTAL COST OF SEWERS
	CONTRACTOR.	INSPECTOR.	STREET.	FROM	TO		48	30	18	15	12	BRICK.	PIPE.	PROPERTY.	FUND.		
April 12	{ Wm. Goff	Jas. Kirkham.....	Wells	Washington ave	Twenty-fifth.....	7			369.32	281.32			650.64	\$788 51	\$122 39	\$9 00	\$919 90
	{ Wm. Parsons.....																
April 21	Val. Kuhlmann	Jas. Kirkham.....	Clybourn	Washington ave	Twenty-ninth.....	5	672					672		459 70	3,129 50	80 50	3,669 70
May 22	Dan'l O'Driscoll.....	Jas. Kirkham.....	Twenty-eighth.....	Clybourn	Sycamore	5			57	395			452	529 74	57 86	27 00	614 60
July 14	Jas. S. Brand.....	F. G. Roese.....	North Canal.....	Seventeenth	Fifteenth	8		20	58	309	309	20	676	710 04	46 56		756 60
August 21	Val. Kuhlmann	E. G. Hayden	Clybourn	Fourteenth	Fifteenth	3					278		278	101 00	257 62	22 50	381 12
October 12	Val. Kuhlmann	B. H. Reynolds.....	Sycamore.....	Washington ave.....	Twenty-sixth	4				58	278		336	262 45	107 15	27 00	306 60
Total.....						32	672	20	484.32	1043.32	865	692	2392.64	\$2,851 44	\$3,721 08	\$166 00	\$6,738 52
							692			2,392.64		3,084.64			\$6,738 52		

cost of same.

SEWERS. IONS.		TOTAL LENGTH OF SEWERS.		COST OF SEWERS CHARGEABLE TO		COST OF INSPECTION.	TOTAL COST OF SEWERS.
	12	BRICK.	PIPE.	PROPERTY.	FUND.		
32	.....	.....	650.64	\$788 51	\$122 39	\$9 00	\$919 90
	.....	672	.....	459 70	3,129 50	80 50	3,669 70
	.....	.....	452	529 74	57 86	27 00	614 60
	309	20	676	710 04	46 56	.....	756 60
	278	.....	278	101 00	257 62	22 50	381 12
	278	.....	336	262 45	107 15	27 00	396 60
32	865	692	2392.64	\$2,851 44	\$3,721 08	\$166 00	\$6,738 52
64		3,084.64		\$6,738 52			

S.

WEST SEWERAGE DISTRICT-A.

Statement showing the number of lineal feet of Sewers built during the year 1885, and cost of same.

DATE OF CONTRACT 1885.	NAME OF		LOCATION OF SEWERS.			MANHOLES.	BRICK SEWERS.		CEMENT PIPE SEWERS.			TOTAL LENGTH OF SEWERS.		COST OF SEWERS CHARGEABLE TO		COST OF INSPECTION.	TOTAL COST OF SEWERS
							DIMENSIONS.		DIMENSIONS.								
	CONTRACTOR.	INSPECTOR.	STREET.	FROM	TO		48	30	18	15	12	BRICK.	PIPE.	PROPERTY.	FUND.		
April 12.....	{ Wm. Goff..... Wm. Parsons..... }	Jas. Kirkham.....	Wells.....	Washington ave.....	Twenty-fifth.....	7			369.32	281.32			650.64	\$788 51	\$122 39	\$9 00	\$919 90
April 21.....	Val. Kuhlmann.....	Jas. Kirkham.....	Clybourn.....	Washington ave.....	Twenty-ninth.....	5	672					672		459 70	3,129 50	80 50	3,669 70
May 22.....	Dan'l O'Driscoll.....	Jas. Kirkham.....	Twenty-eighth.....	Clybourn.....	Sycamore.....	5			57	395			452	529 74	57 86	27 00	614 60
July 14.....	Jas. S. Brand.....	F. G. Roese.....	North Canal.....	Seventeenth.....	Fifteenth.....	8		20	58	309	309	20	676	710 04	46 56		756 60
August 21.....	Val. Kuhlmann.....	E. G. Hayden.....	Clybourn.....	Fourteenth.....	Fifteenth.....	3					278		278	101 00	257 62	22 50	381 12
October 12.....	Val. Kuhlmann.....	B. H. Reynolds.....	Sycamore.....	Washington ave.....	Twenty-sixth.....	4				58	278		336	262 45	107 15	27 00	396 60
Total.....						32	672	20	484.32	1043.32	865	692	2392.64	\$2,851 44	\$3,721 08	\$166 00	\$6,738 52
							692		2,392.64			3,084.64		\$6,738 52			

cost of same.

SEWERS. IONS.		TOTAL LENGTH OF SEWERS.		COST OF SEWERS CHARGEABLE TO		COST OF INSPECTION.	TOTAL COST OF SEWERS.
	12	BRICK.	PIPE.	PROPERTY.	FUND.		
32			650.64	\$788 51	\$122 39	\$9 00	\$919 90
		672		459 70	3,129 50	80 50	3,669 70
			452	529 74	57 86	27 00	614 60
	309	20	676	710 04	46 56		756 60
	278		278	101 00	257 62	22 50	381 12
	278		336	262 45	107 15	27 00	396 60
32	865	692	2392.64	\$2,851 44	\$3,721 08	\$166 00	\$6,738 52
64		3,084.64		\$6,738 52			

S.

Statement showing the number of lineal feet of Sewers built during the year 1885, and cost of same.

DATE OF CONTRACT	NAME OF		LOCATION OF SEWERS.			MANHOLES.	BRICK SEWERS.	CEMENT PIPE SEWERS.			TOTAL LENGTH OF SEWERS.		COST OF SEWERS CHARGEABLE TO		COST OF INSPECTION.	TOTAL COST OF SEWERS
							DIMENSIONS.	DIMENSIONS.								
	CONTRACTOR.	INSPECTOR.	STREET.	FROM	TO		42	18	15	12	BRICK.	PIPE.	PROPERTY.	FUND.		
April 21	{ Jas. O'Connor Jno. O'Neill	E. F. Herzberg	Thomas	Murray ave.	Frederick.	12			885.50	340		1225.50	\$972.79	\$473.30	\$48.03	\$1,494.12
			Frederick	Thomas	Bradford											
April 21	{ Jas. O'Connor Jas. O'Neill	E. F. Herzberg	Bradford	Murray ave.	Frederick.	7			734			734	637.82	345.74	28.77	1,012.33
			Frederick	Bradford	Summit Place											
April 21	Jas. Markey.	B. H. Reynolds.	Farwell ave.	North ave.	Frederick.	2	407.75				407.75		640.79	1,230.78	42.00	1,913.57
May 6	Thos. Morrissey	{ M. Humann M. Tighe	Pearson	Marshall	Astor	3				280		280	307.50	36.90	27.00	371.40
May 6	Thos. Morrissey	M. Tighe.	Milwaukee	Lyon	Ogden	4				340		340	465.80		36.00	501.80
May 6	Dan'l O'Driscoll	Jos. Dunn.	Broadway	Oneida	Biddle.	5		55	340			395	442.47	138.18	21.00	601.85
May 22	{ Jas. O'Connor Jno. O'Neill	E. F. Herzberg	Brady	Astor	Racine	2				294.75		294.75	262.62	73.39	24.00	360.01
May 22	{ Jas. O'Connor Jno. O'Neill	E. F. Herzberg	Bradford	Murray ave.	Cramer	2				234		234	121.90	147.20	23.70	292.80
May 22	Thos. Lee	By. Abert	{ Bellevue Place Frederick	Murray ave.	Frederick	9		90	450	340		889	668.36	392.55	30.00	1,090.91
				Bellevue Place	Summit Place											
June 5	{ Jas. O'Connor Jno. O'Neill	E. F. Herzberg	Knapp	Jackson	Point 127 feet west.					124		124	81.22	39.06	9.00	129.28
June 5	Thos. Lee	By. Abert	{ Irving Place Bartlett	Cambridge ave	Bartlett	11		174	227	574		975	654.36	447.30	24.00	1,125.66
			Bartlett	Irving Place	Cambridge ave.											
			Dane Place	Oakland ave.	Bartlett											
June 30	Con. Murphy	M. Humann.	Cass	Pearson	Brady	2				180		180	159.66	54.51	36.00	250.20
July 14	{ Jas. O'Connor Jno. O'Neill	E. F. Herzberg	Prospect ave.	Woodstock Place	North ave	14		366	600	159		1125	1,176.61	499.64	61.50	1,737.75
August 7	{ Jas. O'Connor Jno. O'Neill	E. F. Herzberg	Kewaunee	Racine	Astor	3				294		294	197.98	151.88	18.00	367.86
September 7	{ Jas. O'Connor Jno. O'Neill	E. F. Herzberg	Oakland	Woodstock Place	La Fayette Place	7			363	280		643	685.62	79.55	45.00	810.17
Total						83	407.75	685	3608.50	3439.75	407.75	7733.25	\$7,475.50	\$4,110.01	\$474.00	\$12,059.51
							407.75		7733.25		8,141			\$12,059.51		

REPORT
OF
STREET IMPROVEMENTS
IN THE
WEST DIVISION—B,
FOR THE YEAR
1885.

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1885 the following street and alley improvements have been completed :

SECOND WARD.

STREET.	FROM	To
W $\frac{1}{2}$ of Eighteenth	Vliet	Cold Spring avenue.
Cold Spring avenue	Twenty-fourth	Randell.
Twenty-fourth	Chestnut	Vliet.
Twenty-first	Cedar	Chestnut.
N. half Cedar	Twenty-fourth	Twenty-fifth.
Twenty-fifth	Cedar	State.
Twenty-third	Chestnut	State.
Fourth	Chestnut	Poplar.
Alley, block 196	Chestnut	Prairie.
Alley, block 45	{ State	Prairie.
		Sixth.
S. Alley, block 131	Sixth	Seventh.
S. alley, block 4, Wells add.	Nineteenth	Twentieth.
Alley, block 206, subd. E. 38 ac. .	State	Prairie.

Making a total length of improved streets and alleys of 7,399 lineal feet, which required :

Cubic yards of excavation	4,989
Cubic yards of filling	1,175
Cubic yards of gravel	2,377
Square yards of gutter paving	2,843
Square yards of alley paving	4,341
Lineal feet of sidewalk planking	5,486
Lineal feet of stone curbing	980

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1885 the following street improvements have been completed :

SIXTH WARD.

STREET.	FROM.	TO.
Walnut.....	Island ave.....	Seventh.
First.....	Walnut.....	Sherman.
Sixth.....	Galena.....	Walnut.
Alley, block 4, Sherman's Add..	Garfield ave.....	North ave.
Alley, block 36, Sherman's Add..	Sherman.....	Reservoir ave.
Alley, block 13, Sherman's Add..	Lloyd.....	Garfield ave.
Alley, blocks 6 and 42.....	Walnut.....	Sherman.

Making a total length of improved streets and alleys of 5,030 lineal feet, which required :

Cubic yards of excavation.....	9,343
Cubic yards of filling.....	300
Cubic yards of gravel.....	578
Square yards of gutter paving.....	570
Square yards of alley paving.....	3,686 $\frac{2}{3}$
Lineal feet of sidewalk planking.....	700
Lineal feet of wood curbing.....	6,183
Square yards of sodding.....	1,973

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1885 the following street and alley improvements have been completed :

NINTH WARD.

STREET.	FROM.	TO.
Walnut.....	45 feet West of Summer.....	Sixteenth.
Twentieth.....	Cherry.....	Galena.
Cherry.....	Twentieth.....	Twenty-first.
Cherry.....	Twenty-first.....	Twenty-sixth.
Galena.....	Twentieth.....	Twenty-fourth.
Plymouth ave., block 106.....	Ninth.....	Tenth.
North alley, block 106.....	Ninth.....	Tenth.
South alley, block 106.....	Ninth.....	Tenth.
North alley, block 111.....	Eleventh.....	Twelfth.
Plymouth avenue and North alley, block 108.	Eleventh.....	Twelfth.
North alley, block 97.....	Tenth.....	Eleventh.
Alleys, block 112.....	Tenth.....	Eleventh.
	Mill.....	Alley running Southwly.

Making a total length of improved streets and alleys of 7,920 lineal feet, which required :

Cubic yards of excavation.....	17,094
Cubic yards of filling.....	1,204
Cubic yards of gravel.....	3,909
Square yards of alley paving.....	4,599 7-9
Square yards of gutter paving.....	4,741 4-9
Lineal feet of sidewalk planking.....	6,814
Lineal feet of wood curbing.....	2,499

STREET IMPROVEMENTS.

WEST DIVISION — B.

During the year 1885 the following street improvements have been completed:

TENTH WARD.

STREET.	FROM	TO
Teutonia	Garfield ave.	Wright.
Eleventh	Wright.	Centre.
Seventeenth	Centre	Hopkins.
Fifteenth	Lee	Centre.
W. $\frac{1}{2}$ Seventh.	Centre	Hadley.

Making a total length of improved streets of 7,199 lineal feet, which required :

Cubic yards of excavation.....	3,561
Cubic yards of filling.....	569
Cubic yards of gravel	1,679
Square yards of gutter paving	4,126
Lineal feet of sidewalk planking	6,340
Lineal feet of wood curbing	3,588

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1885 the following street and alley improvements have been completed :

THIRTEENTH WARD.

STREET.	FROM	To
Clark	Buffum.....	Humboldt ave.
North Pierce	Wright.....	Centre.
E. $\frac{1}{2}$ Seventh.....	Centre	Hadley.
Alley, block 207, Wrights Add. . .	Lee.	Wright.
Alley, blocks N. and 9, Young's Subd. .	Lee.....	Wright.
Alley, block 40, Pierce's Subd. . . .	North ave	Lee.
Alley, block 2, Young's Subd	Clark	Centre.

Making a total length of improved streets and alleys of 6,389 lineal feet, which required :

Cubic yards of excavation	12,678
Cubic yards of filling	588
Cubic yards of gravel	3,242
Square yards of gutter paving	3,703
Square yards of alley paving	5,537
Lineal feet of sidewalk planking	5,797

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1885 estimates were prepared for improving the following streets and alleys :

SECOND WARD.

STREET.	FROM.	TO.
Chestnut	Twelfth	Twenty-first.
Seventeenth	Chestnut	Vliet.
Eighteenth	Chestnut	Vliet.
Twentieth	Prairie	Chestnut.
Cold Spring ave.....	Twentieth	Twenty-first.
N. alley, block 5, Wells' add.	Nineteenth	Twentieth.
N. alley and E. and W. alley, } block 4; Wells Add. }	Nineteenth	Twentieth.
W. alley running S W., block 119.	North alley.....	South alley.
	Winnebago.	S. alley running N. W.

Making a total length of streets and alleys to be improved of 6,587 lineal feet, which requires :

Cubic yards of excavation	11,603
Cubic feet of filling	609
Cubic yards of gravel	1,012
Square yards of alley paving	1,209 4-9
Square yards of gutter paving	1,555 4-9
Lineal feet of sidewalk planking	2,575
Lineal feet of stone curbing	6,167

STREET IMPROVEMENTS.

WEST DIVISION — B.

During the year 1885 estimates were prepared for improving the following streets and alleys :

SIXTH WARD.

STREET.	FROM.	TO.
Buffum.....	Lloyd	Reservoir ave.
Harmon	Island ave.....	Buffum.
Holton	Harmon.....	Garfield ave.
Commerce.....	Poplar	Dock.
Alley, block 35, Sherman's add....	Sherman.....	Reservoir ave.
Alley, block 4, Park add.....	Garfield ave.....	North ave.
Alley, block 25.....	Cherry	Galena.
	Fourth	Fifth.

Making a total length of streets and alleys to be improved of 5,910 lineal feet, which requires :

Cubic yards of excavation	22,364
Cubic yards of filling.....	32,714
Cubic yards of gravel.....	2,410
Square yards of gutter paving	2,338 $\frac{2}{3}$
Square yards of alley paving	3,259
Lineal feet of sidewalk planking	6,606
Square yards of sodding.....	5,183
Lineal feet of stone curbing	1,774
Lineal feet of wood curbing	5,144

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1885 estimates were prepared for improving the following streets and alleys :

NINTH WARD.

STREET.	FROM.	TO.
Walnut.....	Twentieth.....	Twenty-fourth.
South alley, block 100.....	Seventh.....	Eighth.
North alley, block 8, Plankinton's Add.	Sixteenth.....	Seventeenth.
Alleys, block 7, Plankinton's Ad {	Seventeenth.....	Eighteenth.
	North alley.....	South alley.
Alley, block 8, Kneeland's Add..	Cherry.....	Galena.
Alley, block 11, Kneeland's Add.	Cherry.....	Galena.
South alley, block 114.....	Eighth.....	Ninth.
South alley, block 115.....	Seventh.....	Eighth.
Alleys, block 11, Plankint's Ad. {	Eighteenth.....	Nineteenth.
	North alley.....	South alley.
Alleys, block 6, Plankinton's Ad {	Eighteenth.....	Nineteenth.
	North alley.....	South alley.

Making a total length of streets and alleys to be improved of 5,400 lineal feet, which requires :

Cubic yards of excavation	7,329
Cubic yards of filling.....	476
Cubic yards of gravel.....	1,469
Square yards of gutter paving	1,603
Square yards of alley paving.....	7,655
Lineal feet of sidewalk planking	2,226

STREET IMPROVEMENTS.

WEST DIVISION—B.

During the year 1885 estimates were prepared for improving the following streets and alleys :

TENTH WARD.

STREET.	FROM	To
Sixteenth	Centre	Hopkins.
Seventeenth	Centre	Hopkins.
Fifteenth	Lee	Centre.
Eleventh	Lee	Wright.
Tenth	Wine	Lloyd.
Alley block 12, Vliet's add.	Lloyd	North ave.
Alley block 1, Vliet's add.	Sherman	Wine.
Alley block O, subd. W. $\frac{1}{2}$ of E. $\frac{1}{2}$..	North ave	Lee.
Alley block 10, Vliet's add.	Harmon	Lloyd.
Alley block 20, Vliet's add.	Lloyd	Garfield ave.
Alley block B, sub. W. $\frac{1}{2}$ of E. $\frac{1}{2}$..	North ave	Lee.
Alley block 27, subd. lots A, B & C ..	Harmon	Lloyd.
W. alley blocks 210 and 217	Garfield ave	North ave.
Alley block 216, Williams' add. ...	Lloyd	Garfield ave.
Alley block 15, Vliet's add.	Garfield ave	North ave.

Making a total length of streets and alleys to be improved of 11,705 lineal feet, which requires :

Cubic yards of excavation	14,639
Cubic yards of filling	1,606
Cubic yards of gravel	5,466
Square yards of gutter paving	4,244
Square yards of alley paving	8,965 $\frac{2}{3}$
Lineal feet of sidewalk planking	6,603
Lineal feet of wood curbing	2,890

STREET IMPROVEMENTS.

WEST DIVISION - B.

During the year 1885 estimates were prepared for improving the following streets and alleys :

THIRTEENTH WARD.

STREET.	FROM	TO
Third	Centre	Burleigh.....
Sixth.....	Centre	Chamber
Wright	Holton	Pierce.....
Alley, block 49, Pierce's subd....	Clark	Centre
Alley, block 42, Pierce's subd....	Lee	Wright
Alley, block 48, Pierce's subd....	Wright	Clark.....
Alley, block 47, Pierce's subd....	Wright	Clark.....

Making a total length of streets and alleys to be improved of 7,462 lineal feet, which requires :

Cubic yards of excavation	13,026
Cubic yards of filling.....	239
Cubic yards of gravel	1,720
Square yards of gutter paving	1,496
Square yards of alley paving	5,544
Lineal feet of sidewalk planking	3,893
Lineal feet of wood curbing	7,143

STREET PAVEMENTS

During the year 1885, in West Division - B.

WARD.	SQUARE YARDS OF CEDAR BLOCK PAVEMENT.
Second	2,455
Sixth	12,328 2-9
Ninth	4,679

The above new cedar block pavement was laid, as follows :

Second Ward, Fourth street, from Chestnut to Poplar street.

Sixth Ward, Walnut street, from Island ave. to Seventh street.

Ninth Ward, Walnut street, from 45 feet W. of Summer street to Sixteenth street.

During the same year estimates were prepared for paving the streets in the following wards :

WARD.	SQUARE YARDS OF CEDAR BLOCK PAVEMENT.	SQUARE YARDS OF GRANITE PAVE- MENT.
Second and Sixth		15,490
Thirteenth	13,392 2-3	
Second	14,438 1-9	

RECAPITULATION

OF WORK COMPLETED IN THE WEST DIVISION—B.

Total length of streets and alleys improved during the year 1885 was 33,937 lineal feet, or 6.427 miles, which required :

47,665 cubic yards of excavation....	} at a cost of	\$12,875 25
3,836 cubic yards of filling.....		
11,785 cubic yards of gravel, at a cost of.....		11,195 75
15,983 4-9 square yards of gutter paving, at a cost of		7,192 55
18,164 4-9 square yards of alley paving, at a cost of		12,715 10
25,137 lineal feet of sidewalk planking, at a cost of.....		6,032 88
1,973 square yards of sodding, at a cost of.....		217 03
980 lineal feet of stone curbing, at a cost of		588 00
12,270 lineal feet of wood curbing, at a cost of		1,595 10
19,462 2-9 square yards of cedar block paving, at a cost of		20,435 32
Total cost		<hr/> \$72,846 98

RECAPITULATION

OF WORK ESTIMATED IN THE WEST DIVISION — B.

The total length of streets and alleys for which estimates were prepared in the year 1885 is 37,064 lineal feet, or 7.019 miles, which requires :

Cubic yards of excavation	68,961
Cubic yards of filling	35,644
Cubic yards of gravel	12,077
Square yards of gutter paving	11,237
Square yards of alley paving	26,633
Lineal feet of sidewalk planking	21,883
Square yards of sodding	5,183
Lineal feet of stone curbing	7,941
Lineal feet of wood curbing	15,177
Square yards of cedar block paving	27,830 7-9
Square yards of granite paving	15,490

PROFILES

Have been made for establishing grade on the following streets and alleys
during the year 1885 :

STREET.	FROM.	TO.	WARD.	LINEAL FT. OF STREET.
Sixteenth	Lloyd	Centre	Tenth	3,575
Seventeenth	Lloyd	Centre	Tenth	3,575
Eighteenth	Lloyd	Centre	Tenth	3,575
Nineteenth	North ave.	Centre	Tenth	2,663
Canal	Walnut	Humboldt ave.	Sixth.	3,300
Highland Boulevard.	Washington ave.	Western ave.	Second	2,671
Chestnut	Washington ave.	Western ave.	Second	2,671
Twenty-ninth	Watertown Plankr'd.	Chestnut	Second	1,067
Thirty-third	Watertown Plankr'd.	Chestnut	Second	818
Hopkins.	Teutonia	E. line of Sec. 18 ...	Tenth	913
College ave. extended ...	Cedar	Watertown Plankr'd.	Second.	663
State st. and Watertown Plankroad.	Washington ave.	Western ave.	Second.	2,683
Alley, block 47, Pierce's subd.	Wright	Clark	Thirteenth..	600
Alley, block 48, Pierce's subd.	Wright	Clark	Thirteenth..	600
Alley, block 96	Eleventh	Twelfth	Ninth	300
Alley, block 25	Cherry	Galena	Sixth.	740
	Fourth	Fifth		
South alley, block 100 ...	Seventh	Eighth	Ninth	300
Alley block, Vliet's add..	Lloyd	North ave.	Tenth	844
Total				31,558

Or $5\frac{976}{1000}$ miles.

Respectfully submitted,

NICOLAUS ENGEL,

Ass't City Engineer.

REPORT
OF
STREET IMPROVEMENTS
IN THE
SOUTH DIVISION,
FOR THE YEAR
1885.

STREET IMPROVEMENTS.

SOUTH DIVISION.

During the year 1885 the following street and alley improvements have been completed :

FIFTH WARD.

STREET.	FROM.	TO.
Reed.....	South Pierce.....	National ave.
Clinton.....	South Water.....	Florida.
Grove.....	Mineral.....	Greenfield ave.
Ferry.....	Lake.....	South Water.
South Water.....	Barclay.....	280 feet S. E. of Barclay.

Making a total length of improved streets of 3,725 lineal feet, which required :

2,710 cubic yards of gravel, at a cost of.....	\$2,168 00
5,810 square yards of cedar block paving, at a cost of.....	4,357 50
5,856 square yards of granite paving, at a cost of.....	14,640 00

Of the above amount of work done, that on streets was to replace wood block pavement that had been worn out.

STREET IMPROVEMENTS.

SOUTH DIVISION.

During the year 1885 the following street and alley improvements have been completed :

EIGHTH WARD.

STREET.	FROM	TO
Walker.....	Seventh avenue	Eleventh avenue.
Washington	Eleventh avenue	Thirteenth avenue.
Eleventh avenue	National ave.....	Greenfield avenue.
Twelfth avenue	Washington	Greenfield avenue.
Eighteenth avenue	South Pierce.....	Greenfield avenue.
Alley, block 2.....	Madison.....	Greenfield avenue.
Alley, block 3.....	Fifth avenue	Sixth avenue.
Alley, block 19.....	Third avenue	Fourth avenue.

Making a total length of streets and alleys improved of 9,038 lineal feet, which required :

17,883 cubic yards of excavation, }	} at a cost of	\$2,940 41
2,884 cubic yards of filling, }		
8,587 cubic yards of gravel, at a cost of.....		5,600 14
10,725 square yards of gutter paving at a cost of		4,973 60
2,193 square yards of alley paving, at a cost of.....		1,268 21
11,303 lineal feet of sidewalk planking, at a cost of.....		2,779 33
4,010 lineal feet of stone curbing, at a cost of		2,005 00

STREET IMPROVEMENTS.

SOUTH DIVISION.

During the year 1885 the following street and alley improvements have been completed :

ELEVENTH WARD.

STREET.	FROM	TO
Rogers.....	Fifth ave	Tenth ave.
Rogers.....	Second ave	Third ave.
Grant	Ninth ave	W. line B. R. & B. subd.
Alma	Third ave	W. line Wootsch's subd.
Orchard	Eighth ave.....	Eleventh ave.
Mitchell	First ave	Seventh ave.
Fourteenth ave.....	Mitchell.	Burnham.
Second ave.....	Burnham	120 ft. N. of Rogers
N., E. and W. alley, block 139 ...	Seventh ave	Eighth ave.
S., E. and W. alley, block 139....	Seventh ave	Elghth ave.
N. and S. alley, block 139	Lapham.....	Mitchell.
N., E. and W. alley, block 141....	Fifth ave	Sixth ave.
S., E. and W. alley, block 141....	Fifth ave	Sixth ave.

Making a total length of streets and alleys improved of 9,433 lineal feet, which required :

24,032 cubic yards of excavation.....	} at a cost of.....	\$5,274 90
5,525 cubic yards of filling.....		
7,928 cubic yards of gravel, at a cost of.....		3,825 63
8,330 square yards of gutter paving, at a cost of.....		3,039 48
2,525 square yards of alley paving, at a cost of.....		1,490 45
7,462 square yards of cedar block paving, at a cost of.....		7,685 86
11,808 lineal feet of sidewalk planking, at a cost of.....		2,941 71
4,333 lineal feet of wood curbing, at a cost of.....		400 30

STREET IMPROVEMENTS.

SOUTH DIVISION.

During the year 1885 the following street and alley improvements have been completed :

TWELFTH WARD.

STREET.	FROM.	TO.
Stewart	Hilbert.....	123 ft. W. of Hilbert.
Robinson avenue.....	Becher	S. East'ly line of lot 21.
Robinson avenue.....	Ward	Lincoln avenue.
Kenesaw	South Bay st.....	Lincoln avenue.
Greenbush.....	Burnham	Rogers.
Clinton.....	Becher	N. line of S. E. $\frac{1}{4}$ Sec. 5.
Kinnickinnic avenue.....	Mitchell.....	Lincoln avenue.
Lincoln avenue	First avenue.....	Howell avenue.

Making a total length of streets improved of 12,469 lineal feet, which required :

24,523 cubic yards of excavation, }	at a cost of	\$8,911 65
31,762 cubic yards of filling, }		
6,800 cubic yards of gravel, at a cost of		3,837 87
3,458 square yards of gutter paving, at a cost of		1,526 35
11,150 square yards of cedar block paving, at a cost of		8,362 50
9,530 lineal feet of sidewalk planking, at a cost of		2,239 75

Of the above amount of work, that on Kinnickinnic avenue from Mitchell street to Lincoln avenue, was to replace wood block pavement that had been worn out.

STREET IMPROVEMENTS.

SOUTH DIVISION.

During the year 1885 estimates were prepared for improving the following streets and alleys :

FIFTH WARD.

STREET.	FROM.	TO.
E. and W. alley, block 31.....	Clinton.....	Reed.
E. and W. alley, block 92.....	Clinton.....	Reed.
N. and S. alley, block 25	Virginia	College Place.
N. and S. alley, block 4	South Water.....	Lake st.

Making a total length of alleys to be improved of 1,127 lineal feet, which will requires :

Cubic yards of excavation	672
Cubic yards of filling	283
Cubic yards of gravel	795
Square yards of alley paving	2,334

STREET IMPROVEMENTS.

SOUTH DIVISION.

During the year 1885 estimates were prepared for improving the following streets and alleys :

EIGHTH WARD.

STREET.	FROM.	TO.
Washington	Eleventh ave	Thirteenth ave.
Eleventh ave	National ave.	Greenfield ave.
Twelfth ave	Washington	Greenfield ave.
Eighteenth ave.	South Pierce.	Greenfield ave.
E. and W. ailey, block 3.	Fifth ave	Sixth ave.

Making a total length of streets and alleys to be improved of 6,754 lineal feet, which requires :

Cubic yards of excavation	13,290
Cubic yards of filling	1,813
Cubic yards of gravel	5,577
Square yards of gutter paving	8,221
Square yards of alley paving	733
Lineal feet of sidewalk planking	7,512
Lineal feet of stone curbing	3,680

STREET IMPROVEMENTS.

SOUTH DIVISION.

During the year 1885 estimates were prepared for improving the following streets and alleys :

ELEVENTH WARD.

STREET.	FROM.	TO.
Burnham	First avenue	Fourth avenue.
Rogers	First avenue	Third avenue.
Alma	Third avenue	W. l. of Wootsch's subd.
Becher	Forest Home avenue	W. l. of B. R. & B. sub.
Fourteenth avenue	Burnham	Mitchell.
Washington avenue	Greenfield avenue	Lincoln avenue.
N. and S. alley, block 4	Burnham	Rogers.
N. and S. alley, block 14	Maple	Burnham.
N. and S. alley, block 142	Lapham	Mitchell

Making a total length of streets and alleys to be improved of 10,979 lineal feet, which requires :

Cubic yards of excavation	12,959
Cubic yards of filling	6,668
Cubic yards of gravel	10,474
Square yards of gutter paving	7,861
Square yards of alley paving	3,486
Lineal feet of sidewalk planking	12,135

STREET IMPROVEMENTS.

SOUTH DIVISION.

During the year 1885 estimates were prepared for improving the following streets and alleys :

TWELFTH WARD.

STREET.	FROM	TO
Robinson ave.....	Becher	S. E. line of lot 21.
Robinson ave.....	Ward	Lincoln ave.
Winchester	South Bay.....	Lincoln ave.
Kenesaw	South Bay.....	Lincoln ave.
Stewart	Hilbert.....	123 ft. W. of Hilbert.
Lincoln ave	First ave	Howell ave.
N. and S. alley, block 4	Greenfield ave	Orchard.
N. and S. alley, block 13 and 126.	Orchard.	Lapham.

Making a total length of streets and alleys to be improved of 8,356 lineal feet, which require :

Cubic yards of excavation	24,253
Cubic yards of filling.....	2,929
Cubic yards of gravel	4,029
Square yards of gutter paving	7,826
Square yards of alley paving	2,096
Lineal feet of sidewalk planking	11,438

RECAPITULATION

OF WORK COMPLETED IN THE SOUTH DIVISION.

Total length of streets and alleys improved during the year 1885 was 34,665 lineal feet, or 6.565 miles, which required :

66,438 cubic yards of excavation....	} at a cost of	\$17,126 96
40,171 cubic yards of filling.....		
26,025 cubic yards of gravel, at a cost of.....		15,431 64
22,513 square yards of gutter paving, at a cost of.....		9,539 43
4,718 square yards of alley paving, at a cost of		2,758 66
24,422 square yards of cedar block pavement, at a cost of		20,405 86
5,856 square yards of granite pavement, at a cost of.....		14,640 00
32,641 lineal feet of sidewalk planking, at a cost of.....		7,960 79
4,333 lineal feet of wood curbing, at a cost of		400 30
4,010 lineal feet of stone curbing, at a cost of		2,005 00
Total cost		<hr/> \$90,268 64

RECAPITULATION

OF WORK ESTIMATED IN THE SOUTH DIVISION.

The total length of streets and alleys for which estimates were prepared in the year 1885 is 27,196 lineal feet, or 5.151 miles, divided as follows :

Cubic yards of excavation	51,174
Cubic yards of filling	11,693
Cubic yards of gravel	20,875
Square yards of gutter paving	23,908
Square yards of alley paving	8,649
Lineal feet of sidewalk planking	31,085
Lineal feet of stone curbing	3,680

PROFILES

Have been made for establishing grades on the following streets and alleys during the year 1885 :

STREET.	FROM.	TO.	WARD.	LINEAL FT. OF STREET.
Maple.....	Kinnickinnic ave....	Section line.....	Twelfth....	230
Archer ave.....	Kinnickinnic ave....	Allis.....	Twelfth....	480
Becher.....	Forest Home ave....	E. line of Surges subd	Eleventh...	1,506
Grant.....	Thirteenth ave.....	E. line of Surges subd	Eleventh...	755
Eleventh ave.....	Forest Home ave....	Lincoln ave.....	Eleventh...	2,208
Thirteenth ave.....	Forest Home ave....	Burnham.....	Eleventh...	639
Eighteenth ave.....	Merrill.....	N. line of Milbrath & Hartman's subd.	Eleventh...	1,559
Merrill.....	Nineteenth ave.....	Muskego ave.....	Eleventh...	545
Nineteenth ave.....	Becher.....	S. line of Tysons subd	Eleventh...	2,560
Becher.....	Muskego ave.....	Washington ave....	Eleventh...	1,558
Rogers.....	Muskego ave.....	Washington ave....	Eleventh...	1,761
Lake.....	Hannover.....	Reed.....	Fifth.....	375
Alley, block 9 and 130..	Orchard.....	Lapham.....	Twelfth....	620
Alley, block 7.....	Ward.....	Lincoln ave.....	Twelfth....	570
Alley, block 14 and 125..	Orchard.....	Lapham.....	Twelfth....	632
N. and S. alley, block 1..	N. line of alley runing E. and W.	S. alley running E. & W.	Twelfth....	650
N. E. & W. alley, block 1	Kenesaw.....	Aldrich.....	Twelfth....	265
S. E. & W. alley, block 1	Kenesaw.....	Aldrich.....	Twelfth....	265
Alley, block 26.....	Mineral.....	Line bet. blks 26 & 29	Eighth....	335
Alley, block 4.....	Lake.....	South Water.....	Fifth.....	315
Alley, block 27.....	Park.....	Virginia.....	Fifth.....	350
Total length.....				18,178

Or 3.443 miles.

STREET PAVEMENTS

SOUTH DIVISION.

During the year 1885 the following streets were paved with granite paving:

STREET.	FROM	To
Reed.....	South Pierce.....	National avenue.
Clinton.....	South Water.....	Florida.

With Cedar blocks :

STREET.	FROM	To
Grove	Mineral	Greenfield avenue.
Ferry	Lake.....	South Water.
South Water.....	Barclay.....	280 ft. S. E'ly of Barclay
Mitchell	First avenue.....	Seventh avenue.
Kinnickinnic avenue.....	Mitchell.	Lincoln avenue.

Making a total length of 9,734 lineal feet, of which 7,455 lineal feet was repaving to replace pine blocks pavement, and 2,279 lineal feet new streets (Mitchell street, from First avenue to Seventh avenue).

REPAVING AND REPAIRING.

The following is the amount of repairing done by the different Ward foremen in their Wards,

WARD.	SQUARE YARDS OF GUTTER PAVING RELAI'D.	SQUARE YARDS OF ALLEY PAVING RELAI'D.
Fifth.....		
Eighth.....	3,003	
Eleventh.....	400	214
Twelfth.....	176	

Respectfully submitted,

FRED. SCHNEIDER,

Ass't City Engineer.

To GEORGE H. BENZENBERG, Esq.,

City Engineer.

ost of same.

CEMENT PIPE SEWERS. I DIMENSIONS.			TOTAL LENGTH OF SEWERS.	
18	15	12	BRICK.	PIPE
July.....	316	315	.....	630
Aug 76.....	.....	.....	.....	470
Aug.....	38	240	30	278
Aug.....	291	.....	.....	290
Aug 76.....	.....	.....	.....	570
Sept.....	.....	276	.....	270
Oct.....	.....	.....	574	.....
Nov 66.....	288	288	.....	640
79.....	4520	4736	3164	11938
11,935			15,099	

$\frac{360}{000}$ miles.

SOUTH SEWERAGE DISTRICT-CONTINUED.

Statement showing the number of lineal feet of Sewers built during the year 1885, and cost of same.

DATE OF CONTRACT 1885.	NAME OF		LOCATION OF SEWERS.			MANHOLES.	BRICK SEWERS. DIMENSIONS.					CEMENT PIPE SEWERS. DIMENSIONS.			TOTAL LENGTH OF SEWERS.		COST OF SEWERS CHARGEABLE TO		COST OF INSPECTION.	TOTAL COST OF SEWERS.
	CONTRACTOR.	INSPECTOR.	STREET.	FROM	TO		96	72	42	36	30	18	15	12	BRICK.	PIPE.	PROPERTY.	FUND.		
July 14.....	Dan'l O'Driscoll.....	Jos. Dunn.....	Greevbush.....	Lapham.....	Mitchell.....	6							316	315		631	\$746 31	\$232 67	\$18 00	\$996 98
August 7.....	Thos. Morrissey.....	B. H. Reynolds.....	Union.....	Pow.....	Arrow.....	5						476				476	652 07	5 67	9 00	666 74
August 7.....	Thos. Lee.....	B. H. Reynolds.....	Eighth ave.....	Burnham.....	Maple.....	4				30		38	240	30	278	106 00	06 00	24 00	486 00	
August 21.....	Thos. Morrissey.....	B. H. Reynolds.....	South Bay.....	Winchester.....	Kenesaw.....	3						291			291	417 02	68 77	30 00	515 07	
August 21.....	Dan'l O'Driscoll.....	B. H. Reynolds.....	Eighth ave.....	Orchard.....	Lapham.....	6					576				576	777 60	270 72	9 00	1,057 32	
September 15.....	Thos. Lee.....	Ey. Abert.....	Sixth ave.....	Scott.....	Washington.....	3							276		276	220 76	63 52	30 00	314 28	
October 23.....	Dan'l O'Driscoll.....	Jos. Dunn.....	Greenfield ave.....	Sixteenth ave.....	Seventeenth ave.....	6				464	110				574	444 80	1,443 66	84 00	1,972 46	
November 4.....	Dan'l O'Driscoll.....	M. Humann.....	Eighth ave.....	Burnham.....	Rogers.....	7					66	288	288		642	965 87	144 79	33 00	1,143 66	
Total.....						53			94	1975	1095	2679	4520	4736	3164	11935	\$15,785 98	\$12,364 32	\$863 75	\$29,014 05
							3164					11,935			15,099		\$29,014 05			

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15,099 lineal feet, or 2.⁸⁰⁰/₁₀₀₀ miles.

SEWERS. IONS.		TOTAL LENGTH OF SEWERS.		COST OF SEWERS CHARGEABLE TO		COST OF INSPECTION.	TOTAL COST OF SEWERS.
	12	BRICK.	PIPE.	PROPERTY.	FUND.		
50	3779.75	407.75	7733.25	\$7,475 50	\$4,110 01	\$474 00	\$12,059 51
32	865	692	2392.64	2,851 44	3,721 08	166 00	6,738 52
	8946	6014	16640	22,910 86	27,014 74	1,746 00	51,671 60
	4736	3164	11935	15,785 98	12,364 32	863 75	29,014 05
82	18376.75	10277.75	38700.89	\$49,023 78	\$47,210 15	\$3,249 75	\$99,483 68
	.89	48,978.64			\$99,483 68		

S.

RECAPITULATION.

DISTRICT.	BRICK SEWERS. DIMENSIONS.							CEMENT PIPE SEWERS. DIMENSIONS.			TOTAL LENGTH OF SEWERS.		COST OF SEWERS CHARGEABLE TO		COST OF INSPECTION.	TOTAL COST OF SEWERS.
	96	72	54	48	42	36	30	18	15	12	BRICK.	PIPE.	PROPERTY.	FUND.		
East Sewerage District					407.75			685	3268.50	3779.75	407.75	7733.25	\$7,475 50	\$4,110 01	\$474 00	\$12,059 51
West Sewerage District—A				672			20	484.32	1043.32	865	692	2392.64	2,851 44	3,721 08	166 00	6,738 52
West Sewerage District—B	73	667	660			677	3937	2804	4840	8996	6014	16640	22,910 86	27,014 74	1,746 00	51,671 60
South Sewerage District					94		1975	2679	4520	4736	3164	11935	15,785 98	12,364 32	863 75	29,014 05
Total	73	667	660	672	501.75	2652	5052	6652.32	13671.82	18376.75	10277.75	38700.89	\$49,023 78	\$47,210 15	\$3,249 75	\$99,483 68
	10277.75							38,700.89			48,978.64		\$99,483 68			

48,978.64 lineal feet, or $9\frac{276}{1000}$ miles.

Total length of Sewers up to 1885, $118\frac{230}{1000}$ miles, at a cost of \$1,386,611 06

Total length of Sewers during 1885, $9\frac{276}{1000}$ miles, at a cost of 99,483 68

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Total, - - - $127\frac{506}{1000}$ miles, at a cost of \$1,486,094 74

TABLE

Showing the location of catch basins with sewer ventilators built during the year 1885 :

A. WEST SEWERAGE DISTRICT.

N W corner of Third and Locust streets.
 N E corner of Third and Locust streets.
 N W corner of Third and Chambers streets.
 N E corner of Third and Chambers streets.
 N W corner of Fourth street and North avenue.
 S W corner of Fourth and Lee streets.
 N W corner of Fourth and Lee streets.
 S E corner of Fourth and Lee streets.
 S W corner of Fifth and Lee streets.
 S E corner of Fifth and Lee streets.
 S E corner of Seventh and Hadley streets.
 S W corner of Seventh and Chambers streets.
 N W corner of Seventh and Chambers streets.
 S E corner of Eighth and Chambers streets.
 N W corner of Eighth and Chambers streets.
 N E corner of Harmon and Buffum streets.
 N E corner of Richard street and North avenue.
 N E corner of Holton street and North avenue.
 N W corner of Fourteenth and Walnut streets.
 N E corner of Fourth and Walnut streets.
 N E corner of First and Walnut streets.
 S E corner of Prairie and Twenty-third streets.
 S W corner of Prairie and Twenty-third streets.
 S E corner of Twenty-fifth and Cedar streets.
 S W corner of Twenty-fifth and Cedar streets.
 N E corner of Twenty-fifth and Cedar streets.
 S W corner Queen Ann Place and Cedar street.
 N W corner of College ave. and Wells street.
 N W corner of Twenty-eighth and Clybourn streets.
 S W corner of Twenty-eighth and Clybourn streets.
 N E corner of Twenty-eighth and Clybourn streets.
 S E corner of Twenty-eighth and Clybourn streets.

N E corner of Twenty-ninth and Clybourn streets.
 S E corner of Twenty-ninth and Clybourn streets.
 N W corner of Twenty-ninth and Clybourn streets.
 S W corner of Twenty-ninth and Clybourn streets.
 S E corner of Thirtieth and Clybourn streets.
 N E corner of Thirtieth and Clybourn streets.
 N W corner of Twenty-fifth and Clybourn streets.
 S W corner of Twentieth and Cherry streets.
 N W corner of Twentieth and Cherry streets.
 N W corner of Fifteenth and Canal streets.
 N E corner of Fifteenth and Canal streets.
 S E corner of Fifteenth and Canal streets.
 S E corner of Seventeenth and Canal streets.
 N E corner of Seventeenth and Canal streets.
 N W corner of Seventeenth and Canal streets.
 S W corner of Twenty-first and Vliet streets.
 S W corner of Twenty-second and Vliet streets.
 S E corner of Twenty-fourth and Vliet streets.
 N E corner of Twenty-fourth and Vliet streets.
 S E corner of Randell and Vliet streets.
 S W corner of Twenty-third street and Grand ave.
 N E corner of Twenty-seventh and Galena streets.
 N E corner of Thirtieth and Sycamore streets.
 N E corner of Twenty-sixth and Cedar streets.
 S E corner of Twenty-sixth and Cedar streets.
 N E corner of lot 21, block 119, corner of Poplar and Eighth streets.
 N E corner of Thirteenth and Kneeland streets.
 N W corner of Twenty-first and Chestnut streets.
 East side of Clermont street, near C., M. & St. P. R. R. track.
 East side of Fifteenth street, 266 feet north of Clybourn street.
 West side of Fifteenth street, 300 feet north of Clybourn street.
 West side of Muskego ave., 175 feet north of bridge.
 East side of Muskego ave., 175 feet north of bridge.
 North side of North Canal street, opposite Sixteenth street.
 South side of North Canal street, opposite Sixteenth street.
 Total, 67 new catch basins.

B. EAST SEWERAGE DISTRICT.

S E corner of Dane Place and Bartlett street.
 S W corner of Farwell ave. and Thomas street.
 S E corner of Farwell ave. and Thomas street.
 N W corner of Frederick and Thomas streets.
 N E corner of Frederick street and Farwell ave.
 N E corner of Frederick and Greenwich streets.
 N W corner of Frederick and Greenwich streets.
 N E corner of Frederick and Bradford streets.
 N E corner of Murray ave. and Bradford street.
 N W corner of Murray ave. and Bradford street.

N E corner of Murray ave. and Belleview Place.
 N W corner of Murray ave. and Belleview Place.
 Total, 12 new catch basins.

C. SOUTH SEWERAGE DISTRICT.

S W corner of Seventh avenue and Walker street.
 N W corner of Tenth avenue and Scott street.
 N E corner of Eleventh avenue and Scott street.
 N E corner of Tenth avenue and Walker street.
 N E corner of Fifteenth avenue and Scott street.
 N W corner of Fifteenth avenue and Scott street.
 S W corner of Fifteenth avenue and Scott street.
 N W corner of Fifteenth and Greenfield avenues.
 S W corner of Fifteenth and Greenfield avenues.
 N E corner of Sixteenth and Greenfield avenues.
 N W corner of Sixteenth and Greenfield avenues.
 N W corner of Seventeenth and Greenfield avenues.
 S W corner of Seventeenth and Greenfield avenues.
 S W corner of Reed and Mitchell streets.
 N W corner of Greenbush and Mitchell streets.
 S W corner of Greenbush and Mitchell streets.
 N E corner of Eighth avenue and Maple street.
 N W corner of Eighth avenue and Maple street.
 N W corner of Eighth avenue and Burnham street.
 N E corner of Union and Bow streets.
 S E corner of Union and Bow streets.
 N W corner of Union and Bow streets.
 S W corner of Union and Bow streets.
 N E corner of Union and Arrow streets.
 E. side of Kinnickinnic avenue at R. R. crossing.
 W. side of Kinnickinnic avenue at R. R. crossing.
 N E corner of Mineral and Barclay streets.
 S E corner of Mineral and Barclay streets.
 S E corner of Washington and Hanover streets.
 N E corner of Eighth avenue and Orchard street.
 N W corner of Eighth avenue and Orchard street.
 N E corner of Twelfth and Greenfield avenues.
 Total, 33 new catch basins.

RECAPITULATION.

A. West Sewerage District.....	67 new catch basins.
B. East Sewerage District.	12 new catch basins.
C. South Sewerage District.....	33 new catch basins.
Total.....	112 new catch basins.

TABLE,

Showing location of catch basins, with sewer ventilators, rebuilt during 1885 :

A. WEST SEWERAGE DISTRICT.

S W corner of Fourth and Poplar streets.
 N W. corner of Fourth and Poplar streets.
 N E corner of Fourth and Poplar streets.
 N W corner of Twelfth and Wells streets.
 N W corner of Fourth and Walnut streets.
 S W corner of Fourth and Walnut streets.
 S W corner of Fifth and Walnut streets.
 N W corner of Fifth and Walnut streets.
 N E corner of Fifth and Walnut streets.
 S W corner of Sixth and Walnut streets.
 N E corner of Sixth and Walnut streets.
 S E corner of Thirteenth and Walnut streets.
 S W corner of Thirteenth and Walnut streets.
 N W corner of Thirteenth and Walnut streets.
 S E corner of Fourteenth and Walnut streets.
 S W corner of Fourteenth and Walnut streets.
 N W corner of Fourteenth and Walnut streets.
 S W corner of Fifteenth and Walnut streets.
 S E corner of Fifteenth and Walnut streets.
 S E corner of Sixteenth and Walnut streets.
 N E corner of Sixteenth and Walnut streets.
 N W corner of Twenty-first street and Grand avenue.
 N W corner of Twenty-second street and Grand avenue.
 S W corner of Twenty-second street and Grand avenue.
 N W corner of Twenty-third street and Grand avenue.
 N E corner of Twenty-fifth street and Grand avenue.
 S E corner of Twenty-fifth street and Grand avenue.
 S E corner of Twenty-sixth street and Grand avenue.
 S E corner of Twenty-seventh street and Grand avenue.
 N E corner of Twenty-seventh street and Grand avenue.
 S E corner of Second street and Grand avenue.
 S E corner of Eleventh and Lloyd streets.

N E corner of Eleventh and Lloyd streets.
 S W corner of Eleventh and Lloyd streets.
 N W corner of Eleventh and Lloyd streets.
 Total, 35 catch basins rebuilt.

B. EAST SEWERAGE DISTRICT.

N E corner of Lyon and Cass streets.
 S E corner of Lyon and Cass streets.
 S W corner of Lyon and Cass streets.
 N E corner of Lyon and Marshall streets.
 S E corner of Lyon and Marshall streets.
 S W corner of Lyon and Marshall streets.
 N E corner of Knapp and Jefferson streets.
 S E corner of Knapp and Jefferson streets.
 N E corner of Knapp and Jackson streets.
 S E corner of Knapp and Jackson streets.
 S E corner of Knapp and Van Buren streets.
 S W corner of Knapp and Van Buren streets.
 N E corner of Knapp and Cass streets.
 S E corner of Knapp and Cass streets.
 S W corner of Knapp and Cass streets.
 S W corner of Knapp and Marshall streets.
 N E corner of Biddle and Jefferson streets.
 N E corner of Biddle and Milwaukee streets.
 S E corner of Biddle and Milwaukee streets.
 S E corner of Martin and Jefferson streets.
 N W corner of Mason and Jackson streets.
 N W corner of Mason and Van Buren streets.
 N E Corner of Mason and Van Buren streets.
 N E corner of Mason and Cass streets.
 N W corner of Mason and Cass streets.
 N E corner of Mason and Marshall streets.
 N W corner of Mason and Marshall streets.
 N W corner of Mason and Juneau Place.
 Total, 28 catch basins rebuilt.

C. SOUTH SEWERAGE DISTRICT.

[Owing to the illness of the inspector of sewers for this district the list of catch basins rebuilt is omitted.]

REPORT OF THE ENGINEER
OF THE
SPECIAL SEWERAGE WORKS
FOR THE YEAR
1885.

SPECIAL SEWERAGE WORKS, }
MILWAUKEE, January 5, 1886. }

Mr. G. H. Benzenberg, City Engineer:

SIR:—I herewith submit a report for the year ending December 31, 1885. The engine was started July 30, and has been in operation 353 hours; the number of revolutions made was 1,703,830, or 1,150,085,250 gallons pumped into Lake Michigan. The amount of coal consumed for running engine was 250,750 pounds. The amount of coal consumed for all purposes was 476,745 pounds. Ashes taken from the furnace was 87,182 pounds, or 18.2 per cent.

STOCK ON HAND DECEMBER 31.

Coal in shed	tons 1,361; pounds, 1,255
Machine oil, gallons	50
Cylinder oil, gallons	40
Headlight oil, gallons	40
Lard oil, gallons	15
Cotton waste, pounds	250
Babbit soap, cakes	84
Soft soap, barrel	$\frac{1}{2}$
Matches, case	$\frac{3}{4}$
Gauge glasses for boilers	10
Crayon chalk, box	1
Tallow, pounds	4
Lamp wick, bails	4
Asbestos wicking, pounds	1
1-inch packing, pounds	16
$\frac{5}{8}$ -inch packing, pounds	2
$\frac{1}{2}$ -inch packing, pounds	1
5-16-inch gasket rubber, pounds	13
Sheet rubber, pounds	6
Brimstone, pounds	70
Milwaukee cement, bbl.	1
Louisville cement, bbl.	$\frac{1}{4}$

Fire brick	70
Oakum, pounds.....	40
Fire clay, bushel.....	$\frac{1}{2}$
Charcoal, pounds	175
Brooms	2
Maul handles.....	2
6-inch pipe, feet.....	6
2 $\frac{1}{2}$ -inch pipe, feet.....	24
2-inch pipe, feet.....	13
3-inch pipe, feet.....	4
1 $\frac{1}{2}$ -inch pipe, feet.....	12
1-inch pipe, feet.....	64
$\frac{3}{4}$ -inch pipe, feet.....	40
1 $\frac{1}{4}$ -inch pipe, feet.....	24
3-inch elbow.....	1
3-inch cap	1
2 $\frac{1}{2}$ -inch coupling	1
2-inch couplings.....	10
2-inch nipples.....	2
45° elbow, 2-inch.....	1
1 $\frac{1}{2}$ -inch elbows	3
1 $\frac{1}{4}$ -inch elbows	5
1-inch elbows	7
$\frac{3}{4}$ -inch elbows	2
$\frac{1}{2}$ -inch elbows	5
$\frac{1}{4}$ -inch elbows	5
1 $\frac{1}{2}$ -inch T.....	1
1-inch T.....	2
2-inch plugs	3
1 $\frac{1}{2}$ -inch plugs	2
$\frac{1}{2}$ -inch T.....	4
$\frac{1}{4}$ -inch T.....	4
$\frac{3}{4}$ -inch unions	2
1-inch unions	1
$\frac{1}{2}$ -inch union.....	1
$\frac{1}{4}$ -inch unions	3
Steel wedges	20
Salt, barrel	1
Rubber boots, pairs	3
Lonergans glasses, No. 9	2
Emery cloth, sheets	20
Sand paper, sheets.....	38
Lumber on hand taken board measure, 2-inch plank, feet.....	3,840
1-inch common boards, feet.....	3,020
Timber, 12x12, 12 feet long.....	5
10x12, 12 feet long	3
10x12, 10 feet long	2
10x10, 20 feet long	2
10x10, 10 feet long	15
10x10, 18 feet long	2

Timber, 10x10, 12 feet long	9
10x10, 16 feet long	3
8x8, 10 feet long	1
8x8, 12 feet long	1
8x8, 14 feet long	1
1½-inch screws	45
1-inch screws	122
10 penny nails, pounds	30
20 penny nails, pounds	67
4 penny nails, pounds	3
8 penny nails, pounds	65

INVENTORY OF TOOLS.

Heaters	2
Oil tanks, 2 barrel	4
10-inch rope tackle	1
10-inch snatch block	1
1-inch rope, feet	250
Forge	1
Anvil	1
Sledge hammers	2
Table	1
Clocks	2
Reflector lamps	6
Table lamp	1
Hand lamps	8
Spitoons	3
Chairs	4
Lanterns	2
Ink, bottle	1
Slate	1
Ink stand	1
Pens, paper and pencils	
Row boats	2
Waste box	1
Ladders	4
Brace with drills	1
Pipe taps, from 2 in. to ⅛ in., both inclusive.	
Pipe dies, with stock from 2 in. to ⅛ in.	
Chain tongs, 4 feet	1
Jarecki No. 1 pipe tong	1
Jarecki No. 2 pipe tong	1
Vise with pipe jaws	1
Saunders pipe cutter No. 1	1
Saunders pipe cutter No. 2	1
Ratchets	2
Oil cans	8
Drip pans	8

Gallon measure.....	1
Quart measures.....	2
Pint	1
1½ in. hose with nozzle, feet.....	73
Iron wheel barrows.....	2
Wooden wheel barrows.....	2
Scoop shovels.....	2
Long-handled shovels	3
Flue cleaner	1
Oil strainer	1
Hand saw	1
Key hole saws	3
Scissors	1
Spirit level	1
2½-inch steam syphon.....	1
Firing tools, sets.....	2
Grind stone.....	1
1-inch eye bolts.....	4
¾-inch eye bolts	5
⅝-inch eye bolts	2
1½-inch eye bolts	4
Wooden pails.....	6
Iron pails.....	2
Jack screws	6
Jack levers	2
9¾-inch box wrench.....	1
7½-inch box wrench.....	1
4¾-inch box wrench.....	1
7-inch open wrench	1
5½-inch open wrench	1
4½-inch open wrench	1
4-inch open wrench	1
3¼-inch open wrench	1
2½-inch open wrench	1
2⅛-inch open wrench	2
1¾-inch open wrench	1
1⅞-inch open wrench	1
1⅝-inch open wrench	2
1-inch open wrench	2
3¼-inch crow foot wrench	1
3¼-inch socket wrench.....	1
2¼-inch socket wrench.....	1
2-inch socket wrench	2
1⅞-inch socket wrench.....	1
1⅝-inch socket wrench.....	1
1¼-inch socket wrench.....	1
1¾-inch socket wrench.....	1
22-inch monkey wrench.....	1
18-inch monkey wrench.....	1
15-inch monkey wrench.....	1

12-inch monkey wrench.....	1
10-inch monkey wrench.....	1
6-inch monkey wrench.....	1
Picks.....	10
Ax.....	1
Spike maul.....	1
Chisel bar, 3 feet long.....	1
Hydrant wrench.....	1
Hose spanner.....	1
Maul rings.....	3
6-inch hose with flanges, feet.....	25
6-inch foot valve.....	1
6-inch iron funnel.....	1
Blacksmith's tongs.....	3
Iron faucets.....	4
Scrubbing brushes.....	2
Packing hooks.....	4
Packing screws.....	4

Respectfully submitted,

ALBERT LIEBER,

Engineer.

REPORT OF THE CHIEF ENGINEER
OF THE
PUMPING STATIONS
FOR THE YEAR ENDING
DECEMBER 31, 1885.

NORTH POINT PUMPING STATION.

MILWAUKEE, January 21, 1886.

To G. H. Benzenberg, Esq., City Engineer:

SIR—The operations of the machinery at the North and West Side Pumping Stations are herewith reported for the year ending December 31st, 1885.

The engines are now and have been during the year in good serviceable condition, no accident having occurred to interrupt the steady supply of water.

Engines 1 or 2, running single, were in operation 4,187 hours, making 3,551,230 revolutions, pumping 1,582,960,772 gallons of water. Engines 1 and 2, coupled, were run 1,452 hours and 45 minutes, making 1,169,310 revolutions, pumping 1,042,439,865 gallons of water.

Engine number 3 pumped 6,743 hours and 45 minutes, making 9,323,780 revolutions, and raised 3,237,402,891 gallons of water.

Making a total pumpage for the three engines of 5,862,803,528 gallons, or an average of 16,062,475 gallons. This is a daily increase of 1,440,755 gallons daily over the previous year.

The total amount of coal consumed at the works for all purposes was 9,457,100 pounds. The amount of ashes taken from the furnaces was 1,444,615 pounds, or $15\frac{27}{100}$ per cent. of coal consumed.

The lift of water was 160.12 feet. The duty of the engines, calculated from total coal consumed at the works for all purposes, was 82,991,403 pounds lifted one foot for every 100 pounds of coal consumed in boiler furnaces, making no deductions.

January 1, 1885 :

	TONS.	LBS.
Amount of coal on hand and received from Penn. Coal Co., 1884 contract.....	2,005	1,400
Received from N. W. Fuel Co., 1885 contract.....	4,681	1,720
	-----	-----
Total	6,687	1,120
Total coal consumed 1885	4,728	1,120
	-----	-----
Coal on hand January 1, 1886.....	1,959	20
Cotton waste on hand, pounds		50
Lard oil on hand, gallons		20
Cylinder oil on hand, gallons.....		50
Machine oil on hand, gallons.....		10
Headlight oil on hand, gallons		100

The following statement shows the operations of each engine, monthly, during the year :

Statement showing the No. of Hours Pumping, with No. of Revolutions and average No. per minute made with each Engine, average Water Pressure and depth in Pump Well and Lake for year ending December 31, 1885.

MONTHS, 1885.	Number of hours pumping. No. 1 & 2 Engines coupled.		Number of hours pumping. No. 1 or 2 Engine single.		Number of hours pumping. No. 3 Engine.		Number of Revolu- tions. No. 1 and 2 Engines coupled.		Number of Revolu- tions. No. 1 or 2 Engine single.		Number of Revolu- tions. No. 3 En- gine.		Average number of Rev. 1 and 2 En- gine coupled.		Average number of Rev. 1 or 2 En- gine single.		Average Number of Rev. No. 3 En- gine.		Average Water Pres- sure in Pounds.		Average Depth Pump Well in feet.		Average Depth in Lake in feet.	
	H.	M.	No. 1.	No. 2.	H.	M.	No. 1.	No. 2.	No. 1.	No. 2.	No. 3 En- gine.	No. 3 En- gine.	No. 1 and 2 En- gine coupled.	No. 1 or 2 En- gine single.	Average Number of Rev. No. 3 En- gine.	Average Water Pres- sure in Pounds.	Average Depth Pump Well in feet.	Average Depth in Lake in feet.						
January			400.05		740.00		350,870		1,025,240		23.0	57.12		14.6			7.04							
February			428.15		672.00		391,410		950,370		23.5	57.85		15.2			7.67							
March			347.15		722.30		320,100		1,062,750		24.5	56.80		15.3			9.00							
April			336.50		655.35		296,840		911,040		23.1	56.32		14.6			9.20							
May	80.00		362.35		622.45		320,570		829,530		22.2	57.05	12.4	14.7			9.41							
June	631.30			No. 2.			557,270						14.7				9.58							
July	140.15		363.05		585.50		299,710		789,490		22.4	57.39	13.7	13.7			9.33							
August			433.30		687.20		349,280		951,890		23.0	57.19		13.4			9.70							
September			480.20		647.30		400,760		899,280		23.1	57.27		13.9			9.69							
October			490.05		638.35		415,140		858,840		22.4	57.11		14.1			9.50							
November	285.15		279.55		368.10		196,280		518,980		23.4	56.37	11.4	12.4			10.02							
December	315.45		265.05		403.30		239,700		526,370		21.7	56.37	12.6	12.3			9.64							
Totals and Averages,	1,452.45		4,187.00		6,743.45		1,169,310		9,323,780		23.4	56.87	13.4	14.1			9.14							

Statement giving head of water in feet, coal consumed in pounds, total and daily average of water pumped, and average for 1884, and duty of engines, for year ending December 31, 1885.

MONTHS, 1885.	Head of water in feet.	Coal consumed for pumping in pounds.	Coal consumed for banking fires in pounds.	Coal consumed for starting fires in pounds.	Total coal consumed in pounds.	Total ashes in pounds.	Total quantity of water pumped in gallons.	Average quantity of water pumped daily in gallons.	Average quantity of water pumped daily in 1884.	Average duty of engines calculated from total coal consumed.
January	162.80	822,800	2,100	5,400	830,300	132,415	512,384,135	16,851,101	15,248,824	83,888,322
February	163.86	808,200	3,000	6,000	817,200	118,230	504,458,478	18,016,374	14,685,052	84,461,532
March	160.10	790,800	3,000	11,700	805,500	118,692	511,692,630	16,506,213	13,965,560	84,922,236
April	158.79	721,200	4,500	10,500	736,200	115,932	448,647,738	14,954,924	12,898,918	80,801,475
May	160.27	752,900	5,700	9,300	767,900	114,496	484,198,438	15,619,304	15,400,566	82,489,280
June	156.80	856,000	2,100	8,400	866,500	135,573	496,806,205	16,560,206	15,003,945	75,067,331
July	161.14	798,300	3,000	8,100	809,400	126,796	511,394,984	16,496,612	15,276,126	85,012,560
August	160.30	731,800	4,800	6,900	743,500	113,547	486,206,805	15,684,090	14,376,530	87,523,957
September	160.50	766,100	300	6,900	773,300	114,350	499,886,777	16,362,832	15,516,961	85,073,590
October	160.32	743,100	2,400	12,900	758,400	114,510	483,255,080	15,588,873	14,956,545	83,300,638
November	158.10	723,500	1,200	7,800	732,500	111,664	448,635,342	14,954,511	13,439,993	86,854,500
December	158.47	809,200	300	6,900	816,400	128,350	484,236,916	15,620,223	15,148,081	78,434,702
Totals and Averages ..	160.12	9,323,900	32,400	100,800	9,457,100	1,444,615	5,862,803,528	16,062,475	14,621,720	82,091,403

WEST SIDE PUMPING STATION.

HIGH SERVICE.

The operation of machinery and the amount of water repumped, as taken from the reports of Mr. Merke, is herewith given.

The Cope & Maxwell pump, now designated as No. 1, was run 60 hours and 45 minutes, making 208,321 revolutions, and pumped 2,655,676 gallons of water.

The Reynolds-Corlis built by E. P. Allis & Co., now called No. 2, was in operation 8,684 hours and 15 minutes, and made 11,809,069 revolutions, pumping 507,789,967 gallons of water.

The total quantity of water repumped at this station was 510,445,643 gallons, or an average daily pumpage of 1,393,549 gallons.

The total amount of coal consumed was 650,044 pounds; this includes the amount for starting fires, heating building and tower.

The amount of ashes taken from the furnaces was 98,335 pounds, or $15\frac{12}{100}$ per cent. of coal consumed.

The average pressure on main at level of gauge during the year was $43\frac{73}{100}$ pounds.

For details of operation of each machine and pressures I refer you to the monthly statement.

January 1, 1885 :

	TONS.	LBS.
Amount of coal on hand and received from Penn. Coal Co., contract 1884.....	160	944
Received from N. W. Fuel Co., contract 1885.....	367	1,050
Total.....	527	1,994
Total coal consumed, 1885.....	325	44
Coal in shed January 1, 1886.....	202	1,950
Cotton waste on hand, pounds.....		400
Lard oil, gallons.....		25
Cylinder oil, gallons.....		5
Machine oil, gallons.....		30

Statement showing the number of hours pumping, average number per minute revolutions and average number per minute, amount of coal consumed and ashes taken from the furnace, water pressures, total quantity of water and average quantity pumped daily for the year ending December 31, 1885.

MONTHS 1885.	No. of hours pump- ing. Cope & Max- well pumps. No. 1.		No. of hours pump- ing. Reynolds Cor- lis pumps. No. 2.		Number revolutions No. 1 pump.		Number revolutions No. 2 pump.		Average number of revolutions. No. 1.		Average number of revolutions. No. 2.		Coal consumed for pumping in pounds.		Coal consumed for heating and starting fires in pounds.		Total coal consumed in pounds.		Total ashes in pounds.		Average water pres- sure. Delivery Main in pounds.		Average water pres- sure. Suction Main, in pounds.		Total quantity of water pumped in gallons.		Average quantity of water pumped daily in gallons.	
	H.	M.	H.	M.																								
January	11.00		732.00		40.290		977,986		30.5		22.2		64,405		4,290		68,695		9,638		45.75		5.23		42,567,014		1,373,129	
February			672.00				960,924				23.8		58,300		5,429		63,729		9,472		46.75		4.76		41,318,873		1,475,674	
March	9.30		734.30		30,857		996,268		27.00		22.6		57,570		300		57,870		8,220		46.52		5.29		43,232,634		1,394,601	
April	18.00		700.00		60,938		936,910		28.20		22.3		54,600		450		55,050		8,993		47.62		5.05		41,063,967		1,368,798	
May			744.00				1,023,328				22.9		54,000		250		54,250		8,580		42.70		5.02		44,003,104		1,419,455	
June	14.30		705.30		50,847		1,011,118		29.20		23.8		51,430		1,300		52,700		8,404		41.20		.50		44,126,272		1,470,875	
July	1.15		742.45		3,523		10,116,778		23.50		22.8		52,250		300		52,550		8,542		42.20		3.06		43,766,365		1,411,818	
August			730.00				952,354				21.7		47,250		300		47,550		7,027		42.70		2.50		40,951,223		1,321,007	
September	1.30		718.30		5,431		974,550		30.1		22.6		46,250		300		46,550		6,758		40.40		1.20		41,974,884		1,309,162	
October			744.00				990,480				22.1		48,900		300		49,200		7,390		42.40		3.40		42,500,640		1,137,389	
November			720.00				974,520				22.5		49,050		300		49,350		7,824		42.95		2.87		41,904,360		1,396,812	
December	5.00		741.00		16,455		993,873		27.4		22.3		52,250		300		52,550		7,487		43.56		5.22		42,946,307		1,385,364	
Totals and Averages,	60.45		8,684.15		208,321		11,809,069		28.57		22.66		636,225		13,819		650,044		98,335		43.73		3.67		510,445,643		1,393,549	

GENERAL CONDITION OF WORKS.

ENGINES NORTH POINT WORKS.

Only ordinary repairs were made on these engines during the year, and were made by the regular employes at the Works. Engine No. 3 was operated with No. 1 or 2 running single during the year, except in June, when the city was supplied by Nos. 1 and 2 when making connections of steam pipes to new battery of boilers. All the machinery is now in good running condition and the supply kept up by Nos. 1 and 3 engines.

BOILERS.

The repairs made on boilers during the year were light. A new battery of three boilers were put into the north house and were made under contract with John W. Eviston. They were finished and steamed up July 3d, and since that time have been run alternately with south boilers. The boilers and steam pipes have been arranged with a view of giving the best facility for making repairs, as any engine in the building can be run with one battery of boilers shut off, so that repairs can be made on any part of the machinery, steam pipe or boilers without shutting off all the machinery.

ENGINES WEST SIDE HIGH SERVICE WORKS.

Engine No. 1 was erected in 1878 by Cope & Maxwell, to pump 750,000 gallons of water per day under a pressure of 75 pounds per square inch. Since that time the high district has been supplied by this pump until about 15 months ago, but as the district has been enlarged the pressure cannot be kept up in its present condition. It has been used the past year less than

three days, pumping a few hours occasionally at night when necessary to adjust or pack No. 2. It is now being repaired and plunger enlarged, so that the district can be supplied for a few days with this pump, if necessary.

Engine No. 2 was built by E. P. Allis in 1884; nothing has been done to this pump during the year, with the exception of putting packing in stuffing boxes, and was run every day during the year. The total stoppage during the year being three days, and apparently is in as good condition as when first started. I hope, when the other pump is put in good condition, to be able to stop this one for a few days, so that the engine can be painted, in keeping with the other machines of this department.

BOILERS.

Light repairs were made on boilers during the year; they are now in good condition.

Nothing was done to the building during the year, except a little repairs on roof of engine room.

REPAIR SHOP NORTH POINT.

The only addition made this year was a planer; this will be all the tools necessary for some time to make ordinary repairs for both pumping works.

Twenty-four hydraulic indicator and all hydrant valves were turned up for distribution department, and all repairs that have been made at the North Point and West Side stations.

BUILDINGS.

Nothing was done to the building during the year, except slight repairs on cornice and slate roof, and they are now in fair condition.

GROUNDS.

Grounds around tower have been beautified and walks graveled. A few trees planted out in Spring would add greatly to this part. A considerable amount of grading was done for coal road to chute; this chute and trestle work is a great improvement, as it does not mar the appearance of buildings.

The main driveway can be kept in better condition, and the unsightly platform for delivering coal into the south shed has been removed; it will also have the tendency to cheapen the coal, as our man can handle four times the amount that could be done by the old method of trimming with a shovel.

LAKE PIER AND CRIB.

Late in the fall about four hundred feet of the upper works was washed away; the heavy timbers and most of the planks were replaced before the pier was iced over. Some of the planking has since been washed away, but is in a condition that coal can be taken out to boiler at crib. This has been steamed up and has worked satisfactorily, relieving this department of great anxiety in the severe weather, when troubled with ice.

INVENTORY OF TOOLS AND MATERIAL.

NORTH POINT PUMPING STATION.

Turning lathe, complete.....	1
Turning tools.....	14
Lathe dogs.....	4
Drive.....	1
Mandrills.....	3
Drilling machine, complete.....	1
Twist drills.....	18
Common drills.....	22
Planer, complete.....	1
Planer tools.....	8
Angle plates.....	2
Engine to drive same.....	1
Hand brace.....	1
Hand drills.....	18
Grind stone, power.....	1
Grind stone, hand.....	1
Machine taps and dies.....	$\frac{1}{4}$ to $1\frac{1}{2}$ inch.
Pipe taps and dies.....	$\frac{1}{4}$ to 2 inch.
Tap wrenches.....	17
Pipe tongs.....	12
Pipe cutter.....	1
Open wrenches.....	24
Socket wrenches.....	14
Monkey wrenches.....	5
Stop cock wrenches.....	2
Hand hammers.....	3
Files, assorted.....	12
Chisels.....	24
Ratchets.....	2
Ratchet drills.....	14
Boring clamp.....	1
Sledge hammers.....	3
Iron rammer.....	1
Bench vise.....	3
Pipe vise.....	1

Steel bars	4
Packing screws	6
Soldering iron	1
Spirit level	1
Surveyor's level (broken)	1
Plummet	1
Hand saw	1
Cross-cut saw	1
Screw drivers	2
Plane	1
Square	1
Chopping axes	3
Augers	7
Oil stone	1
5 ton block	1
2 ton block	1
16-inch block, single	1
10-inch block, double	2
8-inch block, double	4
8-inch block, single	3
6-inch block, single	1
6-inch block, double	1
Line for above blocks, feet	500
Oil tanks, 250 gallons	3
150 gallons	1
50 gallons	1
5-gallon oil cans, tin	2
2-gallon oil cans, tin	2
1-gallon oil cans, tin	4
brass	3
Filling cans, brass	4
Hand cans	6
Hand lamps	8
Boiler lamps	4
Bracket lamps	24
Table lamp	1
Lantern	1
Corn brooms	12
Paint brushes	3
Water pails	3
Thermometers	2
25 feet ladder	1
20 feet ladders	2
8 feet step ladder	1
5 feet step ladder	1
Tables	2
Chairs	6
Setters	3
Cuspadores	3
Firing tools, sets	2

Coal scale, 5 ton.....	1
$\frac{1}{2}$ ton.....	2
Iron barrows.....	4
2-inch hose, feet.....	150
$\frac{3}{4}$ -inch hose, feet.....	200
Portable forge.....	1
Blacksmith's forge.....	1
Anvil.....	1
Cold chisels.....	3
Tongs.....	12
Swedges, top bottom.....	8
Swedge block.....	1
Fullers.....	4
Flatters.....	3
Punches.....	3
Heading tools.....	10
Sledge.....	1
Hand hammer.....	1
Steel stamp, M. W. W.....	2
Brand, M. W. W.....	1
Steel type alphabet, set.....	1
Numbers, set.....	2
Bars, $\frac{1}{4}$ round iron.....	6
$\frac{3}{8}$ round iron.....	6
$\frac{1}{2}$ round iron.....	7
$\frac{5}{8}$ round iron.....	6
$\frac{3}{4}$ round iron.....	10
$\frac{7}{8}$ round iron.....	10
1 round iron.....	8
$1\frac{1}{8}$ round iron.....	3
$1\frac{1}{4}$ round iron.....	3
$1\frac{3}{8}$ round iron.....	2
$1\frac{1}{2}$ round iron.....	1
$\frac{3}{4}$ square iron.....	2
1 square iron.....	2
Bar, tool steel.....	1
Plates, 1-16 sheet iron.....	4
Blacksmith's coal, ton.....	$\frac{1}{4}$
Shovels.....	2
Spades.....	2
Paving hammer.....	1
Pounder.....	1
Scythes.....	2
Sickle.....	1
Lawn mower.....	1
Iron rakes.....	2
Hay rake.....	1
Tree trimmer.....	1
Picks.....	3
Grabs.....	2

Hoes.....	2
Wheelbarrows.....	2
Hatchet.....	1
Stone cart.....	1
Hand cart.....	1
36-inch cast pipe.....	6
36-inch curves.....	2
30-inch cast pipes.....	3
30-inch short pieces.....	2
20-inch cast pipe.....	6
36-inch gate.....	1
Large stove and pipe.....	1

WEST SIDE WORKS.

Machine taps and dies, $\frac{1}{4}$ to 1 inch, set.....	1
Pipe dies and caps, $\frac{1}{4}$ to 1 inch, set.....	1
Pipe tongs, $\frac{1}{4}$ to 2 inches, set.....	1
Wrenches, $\frac{1}{2}$ to 2 inches, set.....	12
Monkey wrenches.....	3
Tap wrench.....	1
Ratchet.....	1
Drawing knife.....	1
Hand saws.....	2
Pipe cutter.....	1
Hand drill.....	1
Shears.....	1
Screw jack.....	1
Files, assorted.....	12
Planes.....	2
Wood chisels.....	3
Screw driver.....	1
Extension bit.....	1
Spirit level.....	1
Hydrant wrenches.....	3
Drills.....	12
Chisels.....	5
Crow bar.....	1
Pinch bar.....	1
Tongs.....	4
Swedges, top and bottom.....	10
Forge.....	1
Anvil.....	1
Sledge.....	1
Vise.....	1
Lawn mower.....	1
Rakes.....	1
Lantern.....	1
Soldering iron.....	1

Brooms	4
Clock	1
Step ladder	1
Water pails	2
Grind stone	1
Hand hammer	1
Socket wrenches	3
Stop cock wrenches	2
Ladder, 16 feet	1
Ladder, 10 feet	1
Ladder, 5 feet	1
Table lamp	1
Stoves and pipe	2
Shovels	2
$\frac{1}{2}$ ton scales	1
Wheel barrow	1
Coal screen	1
Saw and buck	1
Ax	1
Hose, 1-inch, feet	40
Sets firing tools	2
10 gallon cans	2
5 gallon cans	2
Oil tanks, 55 gallon s.	3
Rubber mats	2
Chairs	4
Table	1

Respectfully submitted,

THOS. McMILLAN,

Engineer.

REPORT
OF THE
SUPERINTENDENT OF DISTRIBUTION
FOR
1885.

REPORT OF SUPERINTENDENT OF DISTRIBUTION.

OFFICE MILWAUKEE WATER WORKS, }
January 13, 1886. }

Geo. H. Benzenberg, Esq., City Engineer.

I herewith submit report of work done by Distribution Department during the year 1885 :

LEAKS REPAIRED IN WATER MAINS.

Joint of 30-inch main on intersection of North street and Farwell avenue.
12-inch main broken at Kinnikinnic river crossing.
Joint of 8-inch main, intersection of East Water and Biddle streets.
Joint of 8-inch main on Eighteenth, north line of Cherry street.
Joint of 8-inch main on Milwaukee, south line of Lyon street.
Hydrant pipe on Park street, west of First avenue.
Joint of 6-inch main on Market Square, 190 feet south of Oneida street, East side.
6-inch main broken over sewer intersection Park street and First ave.

BRANCH CONNECTIONS MADE.

For pumping works	1
For hydraulic elevators	8
For private use	3
For school houses	1
For breweries	3
For fire purposes	8
For parks	1
For manufactories	3
Total	28

CONNECTIONS WITH NEW MAINS.

With 30-inch mains	3
With 12-inch mains	4
With 8-inch mains	8
With 6-inch mains	71
Total	86

NUMBER OF HYDRANTS DRAINED.

East Side.....	182
West Side	290
South Side.....	168
<hr/>	
Total	640

MISCELLANEOUS.

Double nozzle hydrant, set.....	22
Hydrants repaired	41
Hydrants drained.....	81
Hydrants changed	3
Hydrants moved and reset.....	5
Hydrants moved to conform with curb line.....	13
Stop cocks put in	28
Hydrants set, single nozzle	2
Hydrants cut out	2

During the year 1,413 feet of 30-inch pipe was laid around the reservoir, and the 6-inch pipe on Mitchell street, from Third avenue to Sixth avenue, was taken up and replaced by 8-inch pipe, and laid from two to three feet lower.

NUMBER OF HYDRANTS IN USE.

East Side.....	269
West Side	467
South Side	277
<hr/>	
Total	1,013

WATER METERS IN USE.

At Tanneries	10
At Saloons, Restaurants, etc.....	101
At Breweries and Distilleries.....	11
At Factories, etc.....	71
At Dwellings and Private Buildings	175
At Street Railway Stables	6
At Railroad Companies, Stand Pipes, etc.....	10
At Livery Stables and Barns.....	59
At Laundries, Dye Houses and Bakeries.....	24
At Bottling Departments.....	6
At Butcher shops	37
At Flour Mills.....	3
At Malt Houses	6
At Hotels	15
At Bath Houses	3
At Barber Shops.....	13
At Printing Offices.....	4
At Gas Engines.....	11
At Tug Boat Offices	2
At Schools	3
At Turn Hall.....	1
At Market.....	1
<hr/>	
Total	572

SIZE AND MAKE OF METERS SET IN 1885.

SIZE.	WORTHING- TON.	CROWN.	EQUITABLE.	TOTAL.
4 inch.....				
3 inch.....	2			2
2 inch.....	1			1
1½ inch.....	7			7
1 inch.....	17			17
¾ inch.....	32	1		33
⅝ inch.....	109			109
½ inch.....				
Total.....	168	1		169

SIZE, MAKE, NUMBER AND DATE OF SETTING WATER
METERS IN USE.

SIZE.	NUMBER SET.						TOTAL.	
	WORTHINGTON.		CROWN.		EQUITABLE.			
	1876-1884.	1885.	1876-1884.	1885.	1876-1884.	1885.	1876-1884.	1885.
4 inch	4						4	
3 inch	19	2	3				22	2
2 inch	10	1	2				12	1
1½ inch	23	7					23	7
1 inch	49	17	6		3		58	17
¾ inch	64	32	34	1	4		102	33
5/8 inch	152	109			17		169	109
½ inch			13				13	
Total	321	168	58	1	24		403	169

METERS ON HAND DECEMBER 31, 1885.

IN GOOD CONDITION.

SIZE.	WORTHING- TON.	CROWN.	EQUITABLE.	TOTAL.
4 inch				
3 inch	1			1
2 inch	3			3
1½ inch	2			2
1 inch	5		2	7
¾ inch	8	9	3	20
⅝ inch	15			15
½ inch		1		1
Total.....	34	10	5	49

METERS ON HAND DECEMBER 31, 1885.

BEING REPAIRED.

SIZE.	WORTHING- TON.	CROWN.	EQUITABLE.	TOTAL.
4 inch				
3 inch				
2 inch				
1½ inch	1			1
1 inch	1		2	3
¾ inch		11	5	16
⅝ inch	3			3
½ inch		2	19	21
Total	5	13	26	44

REPORT OF NIGHT INSPECTION.

NUMBER OF INSPEC- TION.	NUMBER LEAKS.	NUMBER OF WILLFUL WASTE.	NUMBER REPAIRED.
3,001	138	40	117

INVENTORY OF TOOLS AND MATERIALS.

Derrick, 14 feet.....	1
Derrick, 16 feet.....	1
Sets of Wilson pat. block and chain.....	3
Hydrant levers, oak.....	2
Socket wrench, for manhole covers.....	1
Service stop cock wrenches.....	5
Ladles.....	2
Gasket setters.....	1
Lamp rods.....	3
Set of grappling irons.....	2
Stop cock wrenches.....	7
Manure fork.....	1
Crow bars.....	2
Furnace kettles and bars.....	2
Ax.....	1
Iron kettles.....	2
Sledges.....	2
Water pails.....	3
Gasket irons.....	2
Diamond points and chisels.....	34
Hammers.....	6
Caulking tools, sets.....	2
Common lumber, feet.....	1,000
Shovels.....	4
Hand ax.....	1
Oil can, 10 gallons.....	1
Oil can, 4 gallons.....	1
Oil can, 2 gallons.....	1
Oil can, 1½ gallons.....	1
Collars for hydrants.....	22
Red lights.....	5
Hardies.....	3
Pigs of lead.....	9

Wood hydrant stuffing box wrench.....	1
Monkey wrench.....	1
Steel chipping hammer.....	1
Brown hydrant valve screw.....	3
Screw driver.....	1
Gasket for seat of hydrant.....	20
Half round file.....	1
Clay drain pipe, 3-inch, feet.....	200
Clay bends, 3-inch, feet.....	4
Iron hydrant plugs.....	2
Wood hydrant valves.....	16
Guards for hydrants.....	10
Stowell hydrant valves.....	16
Horses and harnesses.....	2
Wagons.....	2
Sleighs.....	2
Rubber boots, pairs.....	8
Stowell and wood hydrant screws.....	28
Stowell hydrant stuffing box wrench.....	1
Hydrant pumps and hose.....	7
Hydrant wrenches, steel.....	7
Marine pump.....	1
Rubber hose, 2-inch, feet.....	250
Vises.....	2
Cross cut saw.....	1
Hand saws.....	2
Chains.....	4
Level.....	1
Trowel.....	1
Set of screw wrenches for Stowell hydrant.....	2
Steel square.....	1
Wood and Stowell hydrant stuffing boxes.....	27
Grinding stone.....	1
Stowell hydrant tops.....	11
Platform scale, Fairbanks.....	1
Pressure gauges.....	3
Service stop boxes.....	123
Ratchet.....	1
Cement, barrel.....	1
Salt, barrels.....	2
Lanterns.....	2
Gasking balls.....	2
Stem for stop cock, 6 inch.....	1
Stem for stop cock, 8 inch.....	1
Stem for stop cock, 12 inch.....	1
Picks.....	19
Wood hydrant waste valves.....	3
Truck.....	1
Bushel baskets.....	2
Oak frames.....	6

Lead pipe, $\frac{5}{8}$ -inch, coil	$\frac{1}{2}$
Lead pipe, $\frac{3}{4}$ -inch, coil	1
Lead pipe, 1-inch, feet	14
Iron pipe, $\frac{3}{4}$ -inch, feet	64
Iron pipe, 1-inch, feet	32
Iron pipe, $1\frac{1}{4}$ -inch, feet	32
Iron pipe, $1\frac{1}{2}$ -inch, feet	32
Iron pipe, 2-inch, feet	32
Gasket for small nozzle hydrant	407
Gasket for large nozzle hydrant	23
Padlocks	113
Hasps	34
Grip wrenches	2
Chain tongue	1
Pipe cutters	2
Elbows, $\frac{3}{8}$ -inch	4
Elbows, $\frac{1}{2}$ -inch	9
Elbows, $\frac{3}{4}$ -inch	9
Elbows, 1-inch	16
Elbows, $1\frac{1}{4}$ -inch	4
Elbows, $1\frac{1}{2}$ -inch	12
Elbows, 2-inch	4
Elbows, 3-inch	3
T's, $\frac{3}{4}$ -inch	2
Nipples, $\frac{3}{8}$ -inch	4
Nipples, $\frac{1}{2}$ -inch	32
Nipples, $\frac{3}{4}$ -inch	26
Nipples, 1-inch	16
Nipples, $1\frac{1}{4}$ -inch	6
Nipples, 2-inch	4
Bushings, $\frac{3}{4}$ -inch	85
$\frac{1}{2}$ -inch	19
1-inch	47
Unions, $\frac{1}{2}$ -inch	3
$\frac{3}{4}$ -inch	5
1-inch	3
$1\frac{1}{2}$ -inch	9
Couplings, straight, $\frac{3}{8}$ -inch	6
$\frac{1}{2}$ -inch	7
$\frac{3}{4}$ -inch	4
1-inch	5
$1\frac{1}{2}$ -inch	1
bent, $\frac{5}{8}$ -inch	91
$\frac{3}{4}$ -inch	26
1-inch	17
Dies, $1\frac{1}{4}$ -inch	1
$1\frac{1}{2}$ -inch	1
2-inch	1
Guide and dies, 2-inch	1

Gasoline stoves	2
Stocks, pair	2
Blocks of tin, pounds	20
Hydrant wrenches for sprinkling	43
Steamer for thawing hydrants	1
Sleigh runners for steamer	4

Respectfully submitted,

CHAS. J. TRAPSCHUH,

Superintendent of Distribution.

CITY ENGINEER'S OFFICE, }
MILWAUKEE, February 4, 1886. }

G. H. BENZENBERG, ESQ., *City Engineer* :

I herewith submit statements of disbursements, and cost of maintenance and construction of Water Department; also showing streets in which water mains have been laid, water gates and hydrants set, and other statements for the year ending December 31, 1885.

H. W. WHITE,
Bookkeeper.

STATEMENT,

Showing disbursements of Water Department from January 1st to
December 31st, 1885.

MAINTENANCE ACCOUNT.

NORTH POINT ENGINES.

Coal	\$27,067 66	
Packing and gasket.....	154 00	
Lard, castor, headlight and machine oils.....	487 89	
Cotton waste, globe valves, glass, pipe, copper, etc.....	408 09	
Boiler compound, files, emery cloth, lead, iron, etc.....	207 19	
Repairing engines and boilers.....	936 27	
Gas	368 55	
Clearing ice from crib	651 75	
Pay of engineers, oilers, firemen, etc.....	12,509 39	
		<hr/>
		\$42,790 79

NORTH POINT WORKS.

Pay of carpenter and yardman.....	\$1,181 54	
Nails, glass, locks, picks, lumber, hose, lead, etc.....	321 50	
Repairs on pier	89 05	
Painting building and repairing roof.....	228 85	
Repairing coal scale platform	23 81	
		<hr/>
		1,844 75

MACHINE SHOP NORTH POINT.

Forge, block and planer	\$521 84	
Iron, steel, coal, files, etc.....	111 00	
		<hr/>
		632 84
Amount forward.....		<hr/>
		\$45,268 38

Amount forward..... \$45,268 38

HIGH SERVICE ENGINES.

Coal and wood.....	\$2,032 94
Lard, castor and headlight oil.....	273 56
Packing, gasket, waste, iron, emery cloth, etc.....	170 51
Gas.....	371 02
Repairing engines and boilers.....	477 80
Pay of engineers, oilers and firemen.....	5,563 24
	<hr/>
	\$8,889 07

HIGH SERVICE WORKS.

Nails, glass, lumber, repairing walks, etc.....	\$137 04
Calsomining, etc.....	71 02
Heating apparatus.....	219 40
Scale house.....	101 28
Water service and house drains.....	62 48
	<hr/>
	591 22

RESERVOIR.

Pay of keeper and watchman.....	\$1,303 92
Pay of laborer.....	487 50
Nails, oil, coal, brooms, brick, hose, etc.....	148 43
Repairing embankment.....	126 00
	<hr/>
	2,065 85

NORTH STREET BRIDGE.

Pay of day and night men.....	\$960 00
	<hr/>
	960 00

DISTRIBUTION.

Repairing indicators.....	\$46 73
Repairing hydrants, new, and repairing old tools.....	444 82
Rent of waterphone and night inspection.....	641 90
Shoeing horses, oats, hay, corn, repairing wagon, etc.....	804 57
Drain pipe, lumber, lead, stop box frames, etc.....	992 44
Hose, manure, rubber boots, coal, nails, etc.....	363 79
Pay of superintendent, hydrant inspectors, etc.....	8,931 32
Repairing pipe in Kinnikinnic river.....	19 56
	<hr/>
	12,245 13
Amount forward.....	<hr/>
	\$70,019 65

Amount forward..... \$70,019 65

TELEPHONE LINE.

Rent of telephone.....	\$227 50	
		227 50

FERRULES AND BOXES.

Time of tapper and assistant	\$1,283 53	
Ferrules	840 00	
Service boxes.....	694 76	
Horse and wagon for tapper	249 96	
Repairing tapping machine.....	12 31	
		\$3,080 56

WATER METERS.

Setting and repairing meters	\$2,715 39	
Meter boxes	157 62	
Meters	3,226 22	
Freight on Meters.....	25 40	
		\$6,124 63

COLLECTOR'S OFFICE.

Time men turning on and off water	\$1,228 55	
Postal cards, stamps, blank books, etc.....	695 90	
Pay of janitor	96 00	
Pay of collector, assessors, etc.....	9,335 88	
		11,356 33

WATER RATES.

Water rates refunded.....	\$48 25	
		48 25
Maintenance account.....		\$90,856 92

CONSTRUCTION ACCOUNT.

EXTENSION DISTRIBUTION.

Water pipe and castings.....	\$42,626 63
Laying pipe and inspection.....	16,287 04
Hydrants and drain pipe	3,701 91
Water gates	1,956 27
Water gate boxes	1,702 53
Hauling pipe and castings.....	1,357 52
Inspecting water pipe	700 00
Pipe assessment refunded	93 79
Pay of keeper, pipe, yard and laborer.....	1,362 76
	<hr/>
	\$69,788 45

NORTH POINT WORKS.

New boilers and foundations.....	\$9,764 61
Trestle work, coal chute, railway track, etc	3,265 83
Grading ground, making roadway, lumber, sewer pipe, plumbing, new building, etc.....	2,913 19
Covering steam pipes, boilers, etc	426 34
Extra work on foundation, etc.....	337 30
	<hr/>
	16,707 27

HIGH SERVICE ENGINES.

Extra work.....	\$40 00
	<hr/>
	40 00
Amount forward.....	<hr/>
	\$86,535 72

BOARD OF PUBLIC WORKS.

239

Amount forward.....	\$86,535 72
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TUNNEL INTAKE.

Test borings and inspection.....	\$3,360 30	
	<hr/>	\$3,360 30
Construction account.....		<hr/>
		\$89,896 02
Maintenance account.....		\$90,856 92
Construction account.....		89,896 02
		<hr/>
Total for 1885.....		\$180,752 94

STATEMENT

Of the actual cost of maintenance and construction of Water Department
from January 1st to December 31st, 1885.

PUMPING ENGINES, NORTH POINT.

Dr.

To cash expenditures.....	\$42,790 79
To stock on hand January 1st, 1885	6,815 12
To machine shop repairs on engines.....	237 32

 \$49,843 23
Cr.

By time engineer and helper in machine shop	\$308 36
By stock on hand Dec. 31, 1885	4,324 36
	<hr/>
	\$4,632 72
	<hr/>
	\$45,210 51

NORTH POINT WORKS.

Dr.

To cash expenditures.....	\$1,844 75
	<hr/>
	1,844 75

MACHINE SHOP, NORTH POINT.

Dr.

To cash expenditures.....	\$632 84
To time machinist and helper.....	308 36

 \$941 20
Cr.

By repairing North Point engines.....	\$237 32
By repairing West Side engines	14 99
By work for distribution	56 05
	<hr/>
	\$308 36
	<hr/>
	632 84
Amount forward.....	<hr/>
	\$47,688 10

Amount forward..... \$47,688 10

HIGH SERVICE ENGINES.

Dr.

To cash expenditures.....	\$8,889 07
To machine shop, North Point.....	14 99
To stock on hand January 1, 1885.....	895 34
	<hr/>
	\$9,799 40

Cr.

By stock on hand December 31, 1885.....	360 79
	<hr/>
	9,438 61

HIGH SERVICE WORKS.

Dr.

To cash expenditures.....	\$591 22
	<hr/>
	591 22

DISTRIBUTION.

Dr.

To cash expenditures.....	\$15,325 69
To service boxes on hand January 1, 1885.....	96 00
To ferrules on hand January 1, 1885.....	212 15
To machine shop work done.....	56 05
	<hr/>
	\$15,689 89

Cr.

By cash for ferrules, boxes and branch connections.....	\$7,695 80
By boxes on hand December 31 1885.....	181 42
By Ferrules on hand December 31, 1885.....	254 90
	<hr/>
	8,132 12
	<hr/>
	7,557 77
Amount forward.....	\$65,275 70

Amount forward.....		\$65,275 70
---------------------	--	-------------

WATER METERS.

Dr.

To cash expenditures.....	\$6,124 63	
To meters on hand January 1, 1885.....	2,055 78	
		\$8,180 41

Cr.

By cash for meters sold and rents.....	\$2,920 68	
By meters on hand December 31, 1885.....	1,200 10	
		4,120 78
		4,059 63

NORTH STREET BRIDGE.

To cash expenditures.....	\$960 00	
		960 00

COLLECTOR'S OFFICE.

To cash expenditures.....	\$11,356 33	
		\$11,356 33

TELEPHONE LINE.

To cash expenditures.....	\$227 50	
		227 50

RESERVOIR.

Dr.

To cash expenditures.....	\$2,065 85	
---------------------------	------------	--

Cr.

By cash for grass.....	99 50	
		1,966 35

WATER RATES.

To cash refunded.....	\$48 25	
		48 25
		\$83,893 76

CONSTRUCTION ACCOUNT.

EXTENSION DISTRIBUTION.

Dr.

To cash expenditures.....	\$69,788 45	
To stock on hand January 1, 1885.....	10,538 45	
	<hr/>	
	\$80,326 90	

Cr.

By stock on hand December 31, 1885.....	13,891 41	
	<hr/>	
		\$66,435 49

HIGH SERVICE ENGINE.

To cash expenditures.....	\$40 00	
	<hr/>	
		40 00

NORTH POINT WORKS.

To cash expenditures.....	\$16,707 27	
	<hr/>	
		16,707 27

TUNNEL INTAKE.

To cash expenditures.....	\$3,360 30	
	<hr/>	
		3,360 30
		<hr/>
		\$86,543 06

WATER PIPE LAID IN 1885.

EAST SIDE.

STREET.	FROM.	TO.	6-in.	8-in.
Bartlett	Cambridge	Irving	528	.....
Brady	Racine	Astor .....	.....	341
Brady	Racine	Franklin .....	.....	345
Pierson	North Water	Astor	1,077	.....
Franklin	Brady	Hamilton	505	.....
Hamilton	Astor	Franklin	705	.....
Brady	Marshall	Astor .....	.....	331
Summit Place	Murray	Frederick	384	.....
Kewaunee	Astor	Racine	387	.....
Chicago	Jackson	Jefferson	304	.....
Oakland	North	La Fayette	1,082	.....
Highland	Astor	Marshall	353	.....
Knapp	Market	East Water	335	.....
Total .....	.....	.....	5,660	1,017

WATER PIPE LAID IN 1885.

WEST SIDE.

STREET.	FROM	TO	6-IN.	8-IN.	30-IN.
Twenty-sixth	Sycamore	Grand ave	451		
Eleventh	Harmon	Lloyd		406	
Seventeenth	Vliet	Cherry	490		
Holton	Harmon	Reservoir ave	222		
First	Lloyd	Garfield ave	430		
Fourteenth	Tomah	Fond du Lac ave	312		
Eleventh	Sherman	Harmon		1,007	
Wells	Twenty-fifth	Twenty-sixth	377		
Booth	Garfield ave	North ave	408		
Sycamore	Twenty-third	Twenty-seventh	1,627		
Twenty-third	Grand ave	Sycamore	456		
Cold Spring ave	Seventeenth	Eighteenth	342		
Sixteenth	Cold Spring ave	Vliet	472		
Twenty-sixth	Wells	Cedar	536		
Third	Centre	City limits	2,646		
Booth	Lloyd	Reservoir ave	410		
Vliet	Twenty-first	Twenty-third	644		
Twelfth	Garfield ave	Lee	1,134		
Twenty-fifth	Cedar	Wells		491	
Twenty-first	Cedar	State	509		
Ninth	Lloyd	North	921		
Cedar	Twenty-fifth	Queen Ann Place	1,628		
Buffum	Lloyd	Harmon		465	
Commerce	Third	Ship	208	1,839	

WATER PIPE LAID IN 1885.

WEST SIDE—CONTINUED.

STREET.	FROM	TO	6-IN.	8-IN.	30-IN.
Lloyd	Ninth	Tenth	372		
Seventh	Galena	Cherry	521		
State	Twenty-first	Twenty-third	696		
Reservoir ave.	Sixth	Seventh	410		
State	Washington	Twenty-ninth	762		
Hinman	Eighth	292 feet west.	352		
First	North	Lee	740		
Clermont	Clybourn	Hibernia	245		
Tenth	Clybourn	Hibernia	229		
Hibernia	Clermont	Lot 1, block 247.	1,013		
Vliet	Twenty-third	Twenty-seventh.	1,167		
Queen Ann Place	Cedar	State	595		
Wells	Twenty-second	Twenty-third	279		
Cedar	Fourteenth	Fifteenth	362		
Twenty-fourth	Four way	6 feet south of Grand ave	68		
Twenty-fifth	Four way	N. and s. of Grand ave.		106	
Around the Reservoir..					1,413
Total			22,534	4,314	1,413

WATER PIPE LAID IN 1885.

SOUTH SIDE.

STREET.	FROM.	TO.	6-in.	8-in.	12-in.
Grove	Florida	Oregon and	580	742	.....
Oregon	Grove	R. R. right of way... }			
Winchester	South Bay	Lincoln	1,022	.....	.....
Eleventh ave.	National	Park .....	.....	.....	847
Clinton	Mitchell	¼ section line	817	.....	.....
Becher	Present terminus.	Clinton	338	.....	.....
Fifth avenue	Washington	Scott	361	.....	.....
Fifth avenue	Greenfield	Lapham	1,019	.....	.....
Washington	Sixth avenue	Seventh avenue	376	.....	.....
Clinton	Becher	600 ft. south	533	.....	.....
Sixth avenue	Mitchell	Maple .....	.....	402	.....
Allis	South Bay	Lincoln	1,134	20	.....
Clinton	Becher	Pt. North	472	.....	.....
Third avenue	Greenfield	Lapham	1,030	.....	.....
Ninth avenue	Forest Home ave.	Pecher	1,744	.....	.....
Barclay	Lake	South Water	304	.....	.....
Sixteenth avenue	National	South of Mineral	860	.....	.....
South Bay	Winchester	Aldrich .....	.....	.....	656
Eleventh avenue	Greenfield	R. and B. subd. ....	.....	.....	556
First avenue	Mitchell	Becher .....	.....	2,120	.....
Total			10,590	3,284	2,059

STATEMENT, Showing amount of water pipe laid to December 31st, 1885.

PIPE LAID IN 1885.	SIZE OF PIPE.—INCHES.								Total feet laid.	Total miles.
	36	30	24	20	16	12	8	6		
East Side.....							1,017	5,660	6,677	1.268
West Side.....		1,413					4,314	22,534	28,261	5.352
South Side.....						2,059	3,284	10,590	15,933	3.014
Total.....		1,413				2,059	8,615	38,784	50,871	9.634
PREVIOUS TO 1885.										
East Side.....	1,969	3,871		12,932	2,925	6,499	22,736	102,052	152,984	28.971
West Side.....		13,466	680	3,327		27,139	42,745	213,539	300,896	56.986
South Side.....							30,326	76,419		
							† 1,235	* 1,235		
				3,661	1,560	15,876	31,561	75,184	127,842	24.210
Total cast iron pipe.....	1,969	18,750	680	19,920	4,485	51,573	105,657	429,559	632,593	119.801
Wrought iron pipe.....		578							578	.109
Flexible joint pipe.....	2,075			564	480	251			3,370	.642
Total amount pipe.....									636,541	120.552

† Replacing 6-inch pipe.

* Replaced by 8-inch pipe.

WATER GATES SET IN 1885.

EAST SIDE.

STREET.	LOCATION.	6-IN.	8-IN.	12-IN.
Franklin	N. line Brady st.	1		
Bartlett	S. line Dane Place	1		
Pearson	E. line Van Buren	1		
Brady	E. line Astor		1	
Brady	W. line Astor		1	
Chicago	W. line Jackson	1		
Kewaunee	E. line Astor	1		
Knapp	E. line East Water	1		
Highland	W. line Astor	1		
Astor	S. line Brady			1
Racine	N. line Brady	1		
Racine	S. line Brady	1		
Total		9	2	1

WATER GATES SET IN 1885.

WEST SIDE.

STREET.	LOCATION.	6-IN.	8-IN.	30-IN.
Wells	W. line of Twenty-fifth	1		
Wells	E. line of Twenty-fifth	1		
Twenty-sixth	S. line Grand ave.	1		
Sycamore	E. line Washington	1		
Twenty-third	S. line Grand ave.	1		
Booth	S. line North ave.	1		
First	S. line Garfield ave.	1		
Galena	E. line Third	1		
Twelfth	N. line Garfield	1		
Ninth	N. line of Garfield	1		
Ninth	S. line of Garfield	1		
Cedar	W. line of Twenty-fifth	1		
Cold Spring ave.	E. line of Eighteenth	1		
Seventh	N. line of Cherry	1		
First	N. line of North ave.	1		
Fourteenth	S. line of Fond du Lac ave.	1		
Twenty-first	S. line of State	1		
State	E. line of Twenty-first	1		
Clermont	S. line of Clybourn	1		
Garfield ave.	330 feet east of Booth		1	
Tenth	S. line of Booth st.	1		
Vliet	E. line of Twenty-fifth	1		
Vliet	W. line of Twenty-fifth	1		
Commerce	24 feet south of N. line of Poplar		1	
Second	58 feet north of N. line of Cherry	1		
North ave.	E. line of Bremer			1
North ave.	W. line of Reservoir grounds			1
Twenty-fourth	S. line of Grand ave.	1		
Grand ave.	W. line of Twenty-fifth		1	
Twenty-fifth	N. & S. line of Grand ave.		2	
Total		24	5	2

WATER GATES SET IN 1885.

SOUTH SIDE.

STREET.	LOCATION.	6-IN.	8-IN.	12-IN.
First ave.....	S. line of Mitchell.....	1		
Winchester.....	S. line of South Bay st.....	1		
Clinton.....	S. line of Mitchell.....	1		
Fifth ave.....	S. line of Garfield ave.....	1		
Washington.....	W. line of Sixth ave.....	1		
Second ave.....	S. line of Mitchell.....	1		
Fourth ave.....	S. line of Mitchell.....	1		
Fifth ave.....	N. and S. line of Mitchell.....	2		
Sixth ave.....	N. and S. line of Mitchell.....		2	
Mitchell.....	E. line of Fourth ave.....		1	
Mitchell.....	E. line of Sixth ave.....		1	
Third ave.....	S. line of Greenfield ave.....	1		
Grove.....	N. line of Florida.....		1	
Ninth ave.....	S. line of Forest Home ave.....	1		
Eleventh ave.....	S. line of Greenfield ave.....			1
Allis.....	S. line of South Bay st.....	1		
Allis.....	N. line of Lincoln ave.....	1		
Lincoln.....	E. line of Kinnikinnic ave.....		1	
Eleventh ave.....	S. line of Park st.....			1
Sixteenth ave.....	S. line of National ave.....	1		
Total.....		14	6	2

SUMMARY OF WATER GATES.

	6-IN.	8-IN.	12-IN.	16-IN.	20-IN.	24-IN.	30-IN.	36-IN.
East Side	139	27	6	2	8	.....	3	3
West Side	269	50	26	.....	4	2	6	.....
South Side.....	115	33	15	2	2	.....	.....	.....
Total.....	523	110	47	4	14	2	9	3

WATER GATES

Set on line of pipe leading to hydraulic elevators, public buildings, etc.,
in the year 1885.

	3-IN.	4-IN.	6-IN.
Grand avenue, 13½ feet E. of Eighth.....		1	
Grand avenue, 77 feet E. of Eighth.....		1	
East Water, 198 feet S. of Mason		1	
West Water, 91 feet S. of Clybourn		1	
Twelfth, 123 feet N. of Lloyd.....	1		
Galena, 147 feet W. of Second.....		1	
Oregon, 16 feet W. of First avenue		1	
Oregon, 220 feet W. of First avenue.....		1	
Oregon, 446 feet W. of First avenue.....		1	
Commerce, 63 feet N. of Vliet		1	
Commerce, 118 feet S. of Cherry.....		1	
Commerce, 58 feet N. of Cherry		1	
Huron, 88 feet E. of Jefferson		1	
Broadway, 105 feet N. of Oneida		1	
Ogden, 112 feet W. of Milwaukee.....		1	
Michigan, alley W. of Milwaukee.....		1	
East Water, 166 feet S. of Wisconsin.....		1	
Broadway, 156 feet N. of Detroit		1	
Buffalo, 92 feet E. of Broadway.....		1	
Fourth avenue, Eighth Ward Park Fountain.....		3	
Fourth avenue, Eighth Ward Park Fountain.....			1
Grand avenue, E. of Second.....			1
Clinton, sash and door factory	2		
South Water, S. line of Park	1		
South Bay, 192 feet E. of Kenesaw.....		1	
Clinton, National Knitting Works.....	1		
Broadway, A. W. Rich, changed from 3-inch to 4-inch.....		1	
Cedar, E. Mariner.....		1	
Fourth, Matthews Bros. Co.....		1	
Total	5	25	2

BRANCH CONNECTIONS.

Statement of branch connections put in during the year 1885 :

3-inch	5
4-inch	22
6-inch	1
<hr/>	
Total	28

Statement showing total number of branch connections to December 31st, 1885 :

2-inch	3
2½-inch	1
3-inch	146
4-inch	97
6-inch	21
8-inch	1

 269

HYDRANTS SET, 1885.

EAST SIDE.

N E corner Hamilton and Racine sts.
N E corner Bartlett street and Irving Place.
N E corner Pearson and Cass sts.
N E corner Pearson and Marshall sts.
N E corner Pearson and Astor sts.
N E corner Summit Place and Murray ave.
N E corner Summit Place and Frederick st.
N E corner Oakland ave. and Windsor Place.
N E corner Oakland ave. and La Fayette Place.
N E corner Highland Place and Marshall st.
North Water st., between Hamilton and Highland sts.

WEST SIDE.

N W corner Fourth and Reservoir ave.
N W corner Fifth and Cherry sts.
N E corner Thirty-fourth and Mt. Vernon.
N E corner Wells and Twenty-fifth sts.
N E corner Twenty-sixth and Sycamore sts.
N E corner Sycamore and Twenty-fifth sts.
N E corner Sycamore and Twenty-fourth sts.
N E corner Twenty-third and Sycamore sts.
N E corner Booth st. and Reservoir ave.
N E corner Holton st. and Reservoir ave.
Second st., between Walnut and Galena sts.
Galena, between Second and Third sts.
Clybourn, between West Water and Second sts.
Fowler, between West Water and Second sts.
Second, between Clybourn and Fowler sts.
Third, between Cedar and Wells sts.
Fourth, between Cedar and Wells sts.
N E corner Twenty-sixth and Cedar sts.
N E corner Eleventh and Harmon sts.
N E corner Twelfth st. and North ave.

N E corner Twelfth and Lee sts.
 N E corner Third and Hadley sts.
 N E corner Third and Locust sts.
 N E corner Third and Chambers sts.
 S E corner Third and Burleigh sts.
 N E corner Buffum and Harmon sts.
 N E corner Cedar and Twenty-eighth sts.
 N E corner Vliet and Twenty-second sts.
 N E corner Vliet and Twenty-third sts.
 N E corner Seventeenth and Vliet sts.
 N E corner First and Lee sts.
 N E corner State and Twenty-ninth sts.
 Hinman, 292 feet west of Eighth st.
 Hibernia, E. line, lot 1, block 247.
 N E corner Hibernia and Tenth sts.
 N E corner Hibernia and Clermont sts.
 N E corner Vliet and Twenty-fourth sts.
 N E corner Vliet and Twenty-fifth sts.
 N E corner Vliet st. and Washington ave.
 N W corner Commerce and Vliet sts.
 S W corner Commerce and Cherry sts.
 Commerce, 269 feet N. of Cherry.
 Sixth, between Wells and Cedar sts.
 Cedar, between Sixth and Seventh sts.
 Thirteenth, between Cherry and Galena sts.
 Twelfth, between Cherry and Galena sts.
 Prairie, between Eighth and Ninth sts.
 Tenth, between Chestnut and Prairie sts.
 Wells, between Eleventh and Twelfth sts.
 Ninth, between Chestnut and Winnebago sts.

SOUTH SIDE.

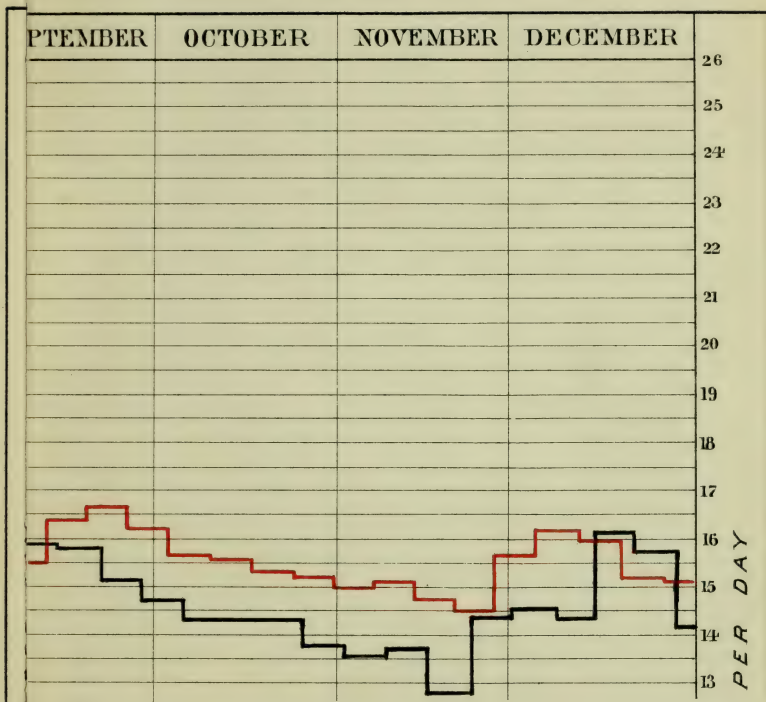
N E corner Winchester st. and Lincoln ave.
 N E corner Becker and Clinton sts.
 N E corner Clinton and Maple sts.
 N E corner Clinton st. and section line.
 N E corner Fifth ave and Orchard st.
 N E corner Fifth ave. and Lapham st.
 N E corner Third ave. and Orchard st.
 N E corner Third ave. and Lapham st.
 Clinton, 364 feet N. of Becher sts.
 Clinton, 387 feet S. of Becher sts.
 S W corner Oregon and Grove sts.
 S E corner Oregon st. and First ave.
 Oregon, 164 feet W. of First ave.
 Oregon, 310 feet W. of First ave.
 N E corner of Ninth ave. and Burnham sts.
 N E corner Ninth ave. and Rogers sts.

N E corner Ninth ave. and Becher sts.
Eleventh ave., 113 feet S. of Orchard sts.
N E corner Sixth ave. and Maple st.
N E corner South Bay and Kenesaw sts.
N E corner South Bay and Aldrich sts.
N E corner First ave. and Maple st.
N E corner First ave. and Burnham st.
N E corner First ave. and Rogers st.
N E corner First ave. and Becher st.
Allis st., 640 feet south of South Bay st.
Corner Allis st. and Lincoln ave.
N E corner Eleventh ave. and South Pierce st.
N E corner Sixteenth ave. and Mineral st.
Sixteenth ave., 288 feet south of Mineral st.
South Water, east of Barclay st.
Winchester st., south of South Bay st.
N E corner Clinton and South Pierce st.

RECAPITULATION.

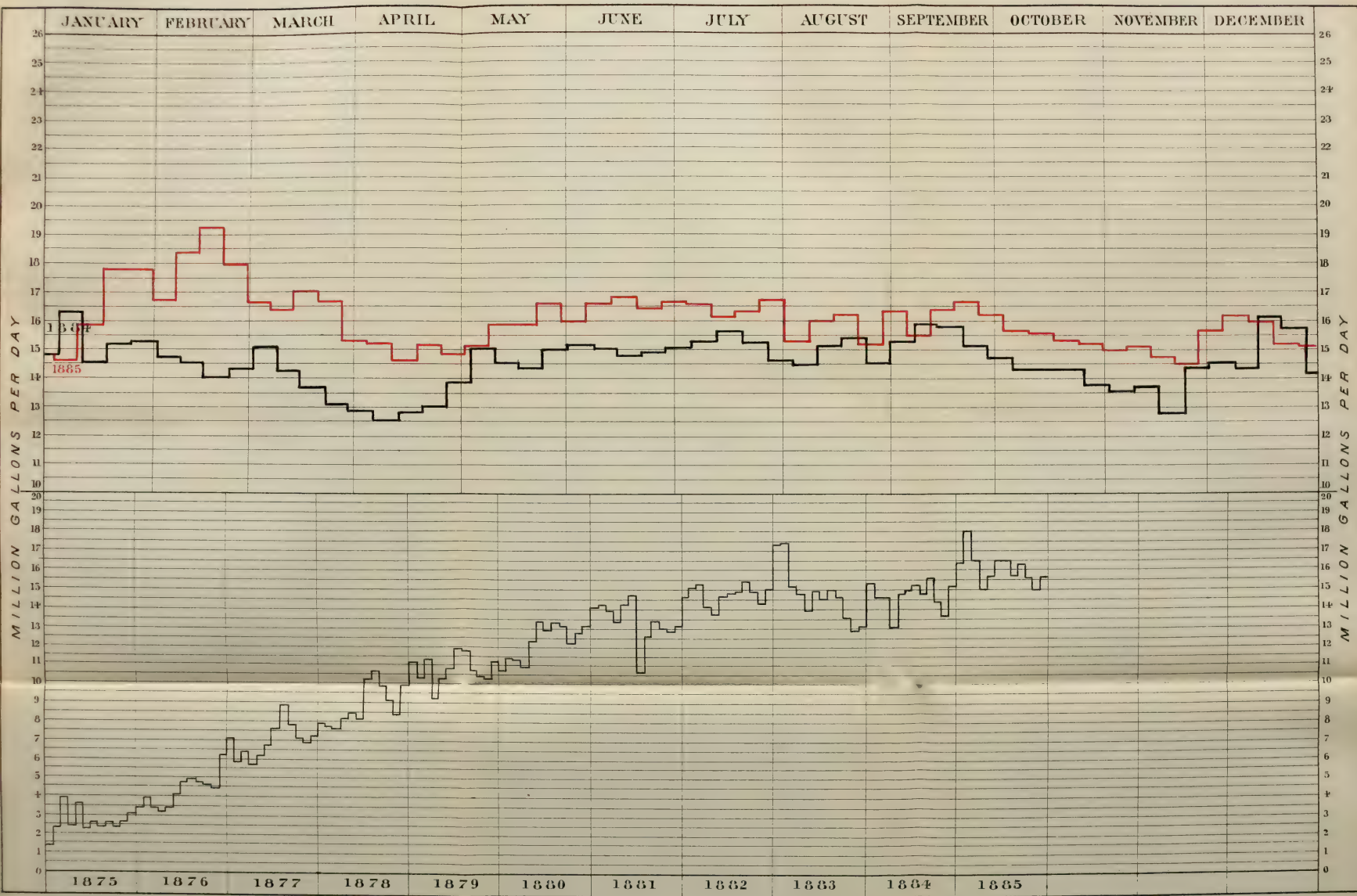
East Side.....	11
West Side	50
South Side	33
<hr/>	
No. of hydrants set in 1885.....	94
No. of hydrants set previous to 1885	920
<hr/>	
Total	1,014
Hydrant corner Sixth and Fowler streets discontinued.....	1
<hr/>	
Total	1,013

low



MILWAUKEE WATER WORKS

Diagram, Showing the average Daily Consumption
Per Week and per Month.



REPORT
OF THE
COLLECTOR OF WATER RATES
FOR
1885.

REPORT OF THE COLLECTOR OF WATER RATES.

OFFICE OF THE COLLECTOR OF WATER RATES,
Milwaukee, February 3d, 1886.

To the Honorable the Board of Public Works:

GENTLEMEN—I herewith submit the within report, being the annual statement of the Office of the Collector of Water Rates of the City of Milwaukee, for the year ending December 31, 1885.

Respectfully,

F. EISSFELDT,

Collector.

STATEMENT

For the year ending December 31, 1885.

Balance cash on hand January 1, 1885.....		\$559 14
Water Rates—		
Regular rates of 1884, uncollected January 1, 1885	\$2,180 39	
Fractional rates of 1884, uncollected January 1, 1885	76 58	
Metered rates of 1884, uncollected January 1, 1885	165 78	
		2,422 75
Regular rates assessed for the year 1885.....	\$148,036 03	
Fractional rates assessed for the year 1885.....	4,567 21	
Metered rates assessed for the year 1885.....	69,962 97	
Miscellaneous.....	2,772 00	
		225,338 21
Street sprinkling	9,628 00	
Fire hydrants.....	20,260 00	
		29,888 00
		255,226 21
Construction Account—		
Branch connections for the year 1882 uncollected		
January 1, 1885	\$225 59	
Branch connections for 1885	1,295 40	
Pipe for extension of branch connections for 1885 ..	63 96	
Couplings, nipples, elbows, etc., for meter connections	88 73	
Repairing meters, indicators and hydrants	30 25	
		1,703 93
Labor digging up stop cock boxes.....	32 50	
Stop cock boxes	617 90	
Meters	2,049 21	
Indicators	18 00	
Ferrules and tapping.....	5,732 00	
Meter rents.....	752 49	
Grass.....	99 50	
Sand.....	2 00	
Street sprinkling certificates on hand January 1, 1885.....	35 09	
Fines and penalties	513 03	
		11,553 65
		\$269,763 75

Amount forward.....		\$269,763 75
Deposited with City Treasurer.....	\$231,309 76	
Delinquent water rates of 1884 returned to Comptroller—		
Regular rates.....	\$2,125 57	
Fractional rates.....	55 40	
	<hr/>	2,180 97
Delinquent Water rates for 1885 returned to Comptroller		
October 31, 1885—		
Regular rates.....	2,279 20	
Fractional rates.....	104 09	
	<hr/>	2,383 29
Deductions allowed on water rates of 1884 uncollected		
January, 1885—		
Metered rates.....		36 79
Regular rates.....	2 08	
Fractional rates.....	84	
	<hr/>	2 92
Deductions allowed on water rates of 1885—		
Regular rates.....	993 18	
Fractional rates.....	116 80	
	<hr/>	1,109 98
Cash refunded for—		
Water rates.....	60 08	
Ferrules.....	13 00	
Building permits.....	2 49	
Sewer permits.....	5 45	
	<hr/>	81 02
Street sprinkling department credit.....	9,628 00	
Fire hydrants department credit.....	20,260 00	
	<hr/>	29,888 00
Street sprinkling certificates on hand.....		35 09
Construction account—		
Branch connections of 1882 uncollected Dec. 31, 1885.....		225 59
Water rates of 1885 uncollected Dec. 31, 1885—		
Regular rates.....	\$2,386 47	
Fractional rates.....	56 14	
	<hr/>	2,442 61
	<hr/>	269,696 02
Balance December 31, 1885.....		\$67 73

CASH STATEMENT

For the year ending December 31, 1885.

Balance on hand January 1, 1885.....		\$559 14
Cash for Regular water rates	\$146,837 19	
Metered water rates.....	70,091 96	
Miscellaneous water rates	2,772 00	
Fines and penalties	513 03	
Construction account.....	1,478 34	
Meters sold.....	2,049 21	
Indicators sold.....	18 00	
Grass sold.....	99 50	
Stop-cock boxes sold	617 90	
Meter rents.....	752 49	
Ferrules and tapping.....	5,732 00	
Sand.....	2 00	
Labor.....	32 50	
		<hr/> 230,996 12
		<hr/> \$231,555 26
Cash deposited with the city treasurer.....	\$231,309 76	
Refunded on regular water rates paid twice.....	96 75	
Refunded on regular water rates overcharged.....	60 08	
Refunded on ferrules.....	13 00	
Refunded on building permits	2 49	
Refunded on sewer permits.....	5 45	
		<hr/> 231,487 53
Balance cash on hand December 31, 1885		\$67 73

EXHIBIT

Of Water Rates for the years 1884 and 1885.

WATER RATES FOR THE YEAR ENDING	DEC. 31, 1884.	DEC. 31, 1885.
Regular and Special Water Rates.....	\$209,147 10	\$222,566 21
Street Sprinkling and Miscellaneous Rates	10,744 65	12,400 00
Water for Fire Hydrants	18,400 00	20,260 00
Total	\$238,291 75	\$255,226 21
Increase for 1885.....	.....	16,934 46

EXHIBIT

Of total Water Rates and yearly increase of same.

YEAR.	ANNUAL AMOUNT OF WATER RATES.	INCREASE.
1874	\$27,155 90	.....
1875	54,720 59	\$27,564 69
1876	77,050 56	22,329 97
1877	91,277 58	14,227 02
1878	103,074 13	11,796 55
1879, including fire hydrants, \$13,460 00.....	135,015 21	31,941 08
1880, including fire hydrants, 14,320 00.....	152,223 26	17,208 05
1881, including fire hydrants, 14,920 00.....	175,526 20	23,302 94
1882, including fire hydrants, 15,880 00.....	198,294 08	22,767 88
1883, including fire hydrants, 16,120 00.....	208,680 90	10,386 82
1884, including fire hydrants, 18,400 00.....	238,291 75	29,610 85
1885, including fire hydrants, 20,260 00.....	255,226 21	16,934 46

HYDRAULIC ELEVATORS.

Total number of hydraulic elevators connected with city mains to December 31, 1885.....	141
Number of hydraulic elevators in use.....	136
Number of hydraulic elevators not in use	5
Number of hydraulic elevators with indicators	136
Number of hydraulic elevators without indicators.....	5

BRANCH CONNECTIONS.

During the year ending December 31, 1885, there were 28 branch connections made for the following purposes :

To supply Hydraulic elevators.....	
Tenement houses.....	2
Public schools.....	1
Malt house.....	1
Armory.....	1
Brewery.....	1
Theater.....	1
Knitting works.....	1
Fountain.....	1
Sash and door factories.....	2
Furniture factory.....	1
Pumping Works.....	1
Beer bottling works.....	1
Flour Mills.....	3
Tanneries.....	3
<hr/>	
Total.....	28
Total number of branch connections put in to date.....	269
Number of branches in use.....	253
Number of branches not in use.....	16

FERRULES.

Total number of ferrules inserted in water mains during the year 1885 :

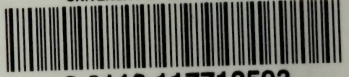
SIZE.	NO.
$\frac{1}{2}$ -in	557
$\frac{5}{8}$ -in	541
$\frac{3}{4}$ -in	131
Total	1,229

Following is a list of the number and size of ferrules inserted in water mains to date :

SIZE.	NO.
$\frac{3}{8}$ -in	1,309
$\frac{1}{2}$ -in	6,964
$\frac{5}{8}$ -in	3,225
$\frac{3}{4}$ -in	603
Total	12,101

	$\frac{1}{2}$ -in.	$\frac{5}{8}$ -in.	$\frac{3}{4}$ -in.	TOTAL.
No. of ferrules on hand January 1, 1885	52	82	123	257
No. of ferrules received during the year 1885	600	600	100	1,300
	652	682	223	1,557
No. of ferrules inserted in mains during 1885	557	541	131	1,229
No. of ferrules on hand December 31, 1885	95	141	92	328

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